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THE

VOYAGES AND WORKS OF JOHN DAVIS,

THE NAVIGATOR.

No. LIX.

THE
VOYAGES AND WORKS

OF

JOHN DAVIS

THE NAVIGATOR.



Edited, with an Introduction and Notes,

BY

ALBERT HASTINGS MARKHAM,

CAPTAIN R.N., F.R.G.S.,

AUTHOR OF "A WHALING CRUISE IN BAFFIN'S BAY", "THE GREAT FROZEN SEA", AND
"NORTHWARD HO!"

"And Davis three times forth that for the north-west made,
Still striving by that course t' enrich the English trade;
And as he well deserved, to his eternal fame,
There, by a mighty sea, immortalized his name."

DRAYTON'S *Polyolbion*.

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CLEMENTS R. MARKHAM,

TO WHOM IS DUE THE CONCEPTION OF THIS WORK,

AND WITHOUT WHOSE

EVER-WILLING ASSISTANCE IT WOULD NEVER

HAVE BEEN COMPLETED,

THIS VOLUME IS AFFECTIONATELY DEDICATED BY

THE EDITOR.

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ERRATA.

At page 27, Note 3, for "*Mermaid*", read "*Moonshine*".

„ 32, „ 2, for "*Newfoundland*", read "*Labrador*".

„ 135, „ 3, for "*See Note 2, page 130*", read "*See Note 9, page 130*".

At page 154, for Note 2, substitute the following:—"Narsinga, or Bijayanagar, was a Hindu kingdom between the Malabar and Coromandel coasts. Its power was broken by the Muhammadan kings of the Deccan in 1565, but it continued to exist until 1685."

At page 341 (Note), for "*Venice in 1493*", read "*Strasburg in 1512*".

INTRODUCTION.

AMONG the distinguished English seamen of the sixteenth century, JOHN DAVIS of Sandridge stands out conspicuously as the one who, more than any other, united the qualities of a daring adventurer with those of a skilful pilot and a scientific navigator. Several were his equals in steady perseverance and desperate gallantry. Some, such as Richard Hawkins and William Baffin, resembled him in their devotion to the scientific branches of his noble profession. But as a seaman combining scientific knowledge and skilled pilotage with the qualities of a fearless and determined explorer, John Davis stands foremost among the navigators of the great Queen. He had other qualities which are needed to complete the character of a perfect sea captain. He knew how to win the love of the men who served him, and the undoubting confidence of those who gave him their trust. He was as genial and considerate, as he was conscientious and honest. This is high praise, but the perusal of all that is known of his career will show that it is deserved. Voyage after voyage did Mr. Sanderson and other merchants entrust Davis with their wealth; and such men as John Jane left their homes and occupa-

tions, and went on long and perilous voyages, for the love of Master Davis, and "for his sake".

Westcote, according to Prince, tells us that John Davis was born at Sandridge,¹ in the parish of Stoke Gabriel. But there is no record of his baptism in the parish registers of Stoke Gabriel, which begin with the 30th year of Henry VIII. Westcote was, however, a contemporary. He describes Sandridge as "a healthy, pleasant seat. It is lifted up on a small hill on the east side of the river Dart, which compasseth near three parts thereof on its way to Dartmouth, from which it stands by water not two miles, by land near four". But of the parentage of Davis we are told nothing. We may assume that his childhood was passed on the banks of the Dart, and that he went to sea as a boy, and thus received a thorough nautical education. The words of Chaucer are, therefore, applicable to our hero:—

"A schipman was he, wonying fer by weste,
For ought I woot he was of Dertemouth."

It is quite certain that, in after life, Davis held property at Sandridge. He always signed himself of Sandridge, and in a letter written to Mr. Sander-son, on his return from his second voyage in 1586, he writes:—"Surely it shall cost all my hope of welfare, and my portion of Sandridge, but I will, by God's mercy, see an end of these businesses." This may be regarded as proving, beyond a doubt, that Davis shared in the ownership of Sandridge. In the

¹ "Here was born that excellent pilot and skilful navigator, and fortunate discoverer of unknown countries, Mr. John Davis."

charter granted by Queen Elizabeth, Adrian Gilbert is also named as of Sandridge.

Westcote and Prince tell us that, after 19 Edward III, Sandridge became the inheritance of the ancient and honourable family of the Pomeroy¹ and when Westcote wrote, in 1630, it still remained in that honourable name.² Thus we have three families residing at or owning Sandridge at the same time—the Pomeroy, the Gilberts, and the Davises. The probable explanation is, that Sandridge was a property on which two or three houses had been built by the Pomeroy, and rented or sold to the families of Davis and of Adrian Gilbert.³

On the 29th of September 1582 John Davis was married to Mistress Faith Fulford,⁴ said, by Prince, to have been a daughter of Sir John Fulford of Fulford, High Sheriff of Devon in 1535, by the Lady

¹ In the time of Henry II, one Stephen de Sandridge held three parts of a knight's fee there, of the Bishop of Exeter. His descendants held Sandridge for a period of 200 years. Next came Pomeroy, probably a younger son of Pomeroy of Berry Castle, in 19 Ed: III.

² Sir Henry Pomeroy of Berry Castle, having no children, settled his lands on his nephew-in-law, Sir Thomas Pomeroy of Sandridge. This Sir Thomas had married Joan, daughter of Sir Thomas Chudleigh, by Joan Pomeroy, sister of Sir Henry of Berry Castle. In the time of Prince, Sandridge belonged to Roger Pomeroy, whose daughter married Humphrey Gilbert of Compton. The Gilberts sold it to John Dunning, Lord Ashburton, in 1770. It came to Lady Ashburton, who left it to her niece the Baroness de Verte, the present possessor of Sandridge.

³ There are now two gentlemen's houses at Sandridge, the "Great House" and the "Farr House".

⁴ Parish Register at Stoke Gabriel,

Dorothy Bouchier, a daughter of the Earl of Bath.¹ The issue of his marriage was a son, Gilbert, baptised at Stoke Gabriel, on March 27th, 1583; a daughter, Elizabeth, who died in infancy; and three other sons, Arthur, born in 1586; John, born and died in 1587; and Philip.²

It will be well here to say something of the Gilberts, the neighbours and friends of Davis, who evidently exercised a great influence on his after life. Sandridge was in the parish of Stoke Gabriel, which adjoins that of Brixham, and the Gilberts had been seated at Greenway, in Brixham parish, for some centuries. Westcote says that "Greenway is very pleasantly and commodiously placed, with a most delightful prospect to behold the barks and boats to pass and repass upon the river flowing from Totnes to Dartmouth". Here dwelt Otho Gilbert in the early part of the sixteenth century, who had also inherited Compton, near Torbay, from an ancestress in the time of Edward II.³ By his wife Kath-

¹ Westcote's *Devonshire*, p. 613, quoted by Prince. The marriage with Faith Fulford is recorded in the Stoke Gabriel Parish Register, but there is some doubt whether she was a daughter of Sir John Fulford of Fulford. In the *Herald's Visitation* of 1564, the children of Sir John Fulford are given, and again in the *Visitation* of 1624. They were John, his heir; Andrew; Elizabeth, married, first to Arundell, and secondly, to T. Cary; and Cecilia, married to William or Nicholas Adams. There is no mention of a Faith, or of a Davis marriage in either *Visitation*. Westcote wrote in 1630, after both *Visitations*; and their silence seems to call for some other testimony in corroboration of Westcote's statement, which I have failed to discover.

² Parish Registers at Stoke Gabriel, and Will of John Davis.

³ Joan, heiress of William Compton of Compton.

arine, daughter of Sir Philip Champernoun of Modbury, he had three sons, John, Humphrey, and Adrian. He died when his children were still very young, and his widow married, secondly, Walter Raleigh of Fardel, by whom she had two more sons, named Carew and Walter. The youngest, afterwards the famous Sir Walter Raleigh, was born in 1552.

John Davis was probably born in about 1550. The Gilberts were, therefore, his seniors by some years ; John having been born in 1537, Humphrey in 1539, and Adrian a year or two later. Sir Walter Raleigh was two years younger than Davis. The eldest, Sir John Gilbert, remained at home, was highly respected in the county, and, dying childless, was buried in Exeter Cathedral.

Humphrey Gilbert, the second son, was educated at Eton and Oxford ; and devoted himself to the study of navigation and the art of war. He was introduced to court by his aunt, Mrs. Katherine Ashley, and became known to the Queen in 1571. In 1563 he had served with distinction under the Earl of Warwick at Newhaven, and on New Year's day of 1570,¹ he was knighted by Sir Henry Sidney at Drogheda for his gallant service in Ireland. In 1572 he went to Flushing to help the Zeelanders in their glorious fight against Spanish tyranny. But his thoughts were mainly turned to the improvement of navigation, and the discovery of unknown countries. His discourse, to prove a North-West

¹ Not 1577, as stated by Prince in his *Worthies of Devon*.

Passage, concerning which it will be necessary to say more presently, was printed in 1576.¹ Two years afterwards he received letters patent to discover the north parts of America, and he made his first voyage to Newfoundland in 1579. The Queen had given him a jewel, consisting of a small anchor of beaten gold with a large pearl on the peak, which he evermore wore on his breast. He sailed on his last expedition in 1583, with five vessels. In August he took possession of Newfoundland in the name of the Queen, and commenced an examination of its coasts. One vessel, the *Raleigh*, had put back early in the voyage; the *Delight* was lost in a storm; and he was left with only the *Golden Hind*, of forty, and the *Squirrel*, of ten tons. It became necessary to return home, and he was entreated to come on board the *Golden Hind*. But, as commander, he declared he would share the dangers of the little *Squirrel*. The rest of the story was told by the master of his consort, Mr. Hayes. Gilbert was last seen in the evening of September 9th, sitting in the stern of the *Squirrel* with a book in his hand. His last words were, crying out to the men on board the *Hind*, "We are as near to Heaven by sea as by land".² That night the little boat was swallowed up by the waves.

Adrian Gilbert, the youngest brother, was a man of varied accomplishments. Besides being an enthu-

¹ See Hakluyt (2nd edition), ii, pp. 33 to 47.

² Hakluyt, *Principal Navigations*, p. 695. The Report of the Voyage by Mr. Edward Hayes.

siastic promoter of voyages of discovery, he was skilled in mineralogy, and, for some time, had the management of silver mines at Combe Martin on the north coast of Devon. The children of Sir Humphrey continued the line of Gilberts.¹

These gallant youths of Greenway were the neighbours and friends of Davis, who, however, must have taken to a seafaring life very early, for he first appears in history as a high authority respecting the practicability of a north-west passage to China. The fact of his being thus consulted was not, however, entirely due to his skill in navigation and experience as a seaman. It was partly owing to his friendship with the Gilberts and their half-brother, Sir Walter Raleigh, and especially with Adrian Gilbert.

The first mention of John Davis that I can find is in the year 1579. It occurs in the private diary of Dr. John Dee,² the astrologer, and "eminent

¹ Sir Humphrey Gilbert married Anne, daughter of Sir Anthony Ager of Kent, and had five sons (not nine, as stated by Prince) and one daughter. The eldest, Sir John Gilbert, married a daughter of Sir Richard Molyneux of Sefton, but died childless. The youngest, Sir Raleigh Gilbert, alone had issue. He dwelt at Greenway in 1635 (see Pole, page 282). His son, Ager Gilbert, married a daughter of Edward Walrond of Bovey, and had a son Humphrey Gilbert, who sold Greenway and went to live at Compton, near Torquay. He married Joan, daughter of Roger Pomeroiy.

² John Dee was born in London on July 13th, 1527. He was educated at Cambridge, and a Fellow of Trinity. He resided two years at the University of Louvain, and afterwards at Rheims, and was a very learned mathematician and cosmographer. He also practised astrology, and was tried on a charge of working against Queen Mary's life by enchantment. On the accession of Elizabeth, he came into favour, and settled at Mortlake, where he calculated

philosopher of Mortlake". Dr. Dee appears to have made his notes principally on the margins of old almanacs, in a diminutive and almost illegible handwriting. These scraps were found in the library of the Ashmolean Museum at Oxford, and, being collected together, were printed for the Camden Society in 1842.

In this diary, against the date October 18, 1579, we read: "Mr. Adrian Gilbert and John Davys reconcyled themselves to me, and disclosed some of Emery his most dishonest, hypocritically, and devilish dealings and devises agaynst me and other, and likewise of that errant strompet her abominable wordes and dedes; and John Davis sayd that he might curse the tyme that ever he knew Emery, and so much followed his wicked counsayle and advyse, so just is God". .

This can be no other than Emery Molyneux, who constructed the two globes—one celestial and the other terrestrial—which were made by order of Mr. Wm. Sanderson, and dedicated to Queen Elizabeth. What he had done to incur the wrath and displeasure of Davis and Dr. Dee I have been unable to discover.

We also read in the same journal that on June 3, horoscopes and nativities. He was intimate with most of the great navigators of his time. He was abroad from 1584 to 1589, when he visited the Emperor Rudolph II at Prague. He was Chancellor of St. Paul's Cathedral, and died at Mortlake in 1608. See a notice of his work on navigation in Appendix A. His private diary was edited for the Camden Society by Mr. Halliwell in 1842.

1580, "Mr. A. Gilbert and J. Davys rode homeward into Devonshire." This would lead us to infer that Davis was then living at Sandridge, and that the two friends were riding home together for mutual protection and companionship.

The next mention of the name of John Davis in Dr. Dee's journal is three years subsequent to the date of the above extract. He writes: "Jan. 23, 1583. The Ryght Honorable Mr. Secretary Walsingham cam to my howse, where by good lok he found Mr. Awdrian Gilbert, and so talk was begonne of North-west Straights discovery. Jan. 24. I, Mr. Awdrian Gilbert, and John Davis, went by appointment to Mr. Secretary to Mr. Beale his howse, where onely we four were secret, and we made Mr. Secretary privie of the N.W. passage, and all charts and rutters were agreed upon in generall."

A little further on we read: "March 6. I and Mr. Adrian Gilbert and John Davis did mete with Mr. Alderman Barnes,¹ Mr. Tounson,² and Mr. Yong,

¹ Sir George Barnes or Barne was one of the most influential Directors of the Muscovy Company. He was Lord Mayor of London in 1552, and died in 1558. His daughter, Annie, married, first Alexander Carleyll, and secondly, Sir Francis Walsingham; and his son, also Sir George Barne, was Lord Mayor in 1586. This is the Alderman Barnes of Dee's diary. He died in 1592, and is the ancestor of the present Colonel F. St. John Barne, M.P., of Sotterley Park.

² Probably Towrson or Towerson, a name much connected with voyages of discovery. Mr. William Towrson, merchant of London, made voyages to Guinea in 1555, 1556, and 1557 (*Hakluyt's Principal Navigations*, pp. 98 to 129). Gabriel Towerson was in the Indian voyages of Captain Saris, and was afterwards put to

and Mr. Hudson¹ about the N. W. passage. March 17. Mr. John Davys went to Chelsey with Mr. Adrian Gilbert to Mr. Radforth's, and so the 18th day from thence toward Devonshyre."

Although Dr. Dee lived for many years after the above extract from his diary was written, and continued to make notes of important events as they occurred, and although we have direct evidence that he was interested in all matters connected with the discovery of a North-west Passage, we find no allusion in his journal to the despatch of any of the expeditions that ensued, or any further reference made to those who were engaged in them.²

His name, however, together with that of Adrian Gilbert and John Davis, appears in a memorial presented to Queen Elizabeth, an abstract of which is given in the Calendar of State Papers.³

death by the Dutch in the massacre of Amboyna in 1623. He married the widow of Captain W. Hawkins. (See *Hawkins's Voyages*, p. xlv.)

¹ This was Thomas Hudson, son of Henry Hudson, one of the founders of the Muscovy Company, and probably an uncle of Henry Hudson, the navigator. Thomas Hudson lived at Mortlake, and Dr. Dee has an entry on February 11th, 1583, that the Queen stopped at his door, and "so I went by her horse side as far as where Mr. Hudson dwelt." (*Diary*, pp. 18, 19.)

² This may be accounted for by the fact that Dr. Dee was abroad from 1584 to 1589.

³ *Domestic. Elizabeth, Addenda.* It is as follows:—

"Adrian Gylberte, having heretofore greatly travelled, and continuing to his great charges to travel to discover the northerly parts of Atlantis, called Novus Orbis, not inhabited or discovered by any Christians hitherto, but by him, requests the Queen's licence for himself and his associates, to be named in a schedule,

In the same volume there is an abstract of the provisions in the Letters Patent granted by the Queen, which, however, I give in an appendix in their entirety, as printed by Hakluyt. One article was not included in the patent, which gives the names of Gilbert's associates as follows :—"The said Adrian Gilbert, Walter Rayley, and John Davys to be custom free for their proper goods during the space of 60 years, which they shall bring from those lands to be discovered."¹ Here the name of Sir Walter Raleigh is substituted for that of Dr. John Dee.

In the Letters Patent a right of search for passages by the north, north-east, and north-west to China is granted to a company, presided over by Mr. Adrian Gilbert. The result of the grant of this charter was the despatch of the two vessels *Sunshine* and

with shipping, men, and all necessaries, to depart to any of the northerly parts between the Equinoctial Line and the North Pole ; with liberty to inhabit and enjoy all such places so discovered. A fifth part of all gold, silver, pearls, etc., to belong to Her Majesty. Commodities from thence to be brought to London and Dartmouth. To hold all those northerly parts to him, his heirs and assigns for ever. Power to confiscate the ships and goods of others trafficking in those parts. To sue, if need be, and to be incorporated under the name of 'The Collegiate of the Fellowship of new Navigations Atlantical and Septentrional'. Power to make laws in those countries, not being contrary to those in this realm. Adrian Gylberte, John Dee, and John Davies, having been the chiefest travellers to find out this northerly voyage, and being of that company, to be specially exempted for ever from payment of custom outwards or inwards."

¹ *Calendar of State Papers, Domestic, Eliz.*

Moonshine, under the command of John Davis, in 1585.¹

The expenses of this voyage were defrayed by “divers worshipfull merchants of London and of the west country”. The former were represented by Mr. William Sanderson, who, we are told, “was so foreward therein that, besides his travail, which was not small, he became the greatest adventurer with his purse”. Mr. Sanderson was an important person in all that concerns the northern voyages of Davis, which he steadily and munificently supported; and he was, moreover, a patron of geographical knowledge, as well as an influential merchant.² Some account of him is therefore necessary in a life of his friend, John Davis the navigator.

Mr. Sanderson’s great grandfather, Richard Sanderson, was living at Pontefract in Yorkshire, in 1480. Richard’s son Stephen removed to London in 1495, and married Alice, the heiress of Henry Skirne, alias Castilion, descended from a Gascon of that name who had a coat of arms resembling those of Castille, doubtless a canting shield. Stephen had brothers

¹ It is interesting to note in the latter part of this Charter, the instructions relative to the punishment of offenders. The power of inflicting or awarding punishments was, it will be seen, vested not solely in the hands of the commander, but in those of a tribunal composed of twelve of the company selected by the leader—in other words, a Court Martial.—See Appendix.

² Hakluyt inserts a letter from Mr. Henry Lane to the worshipful M. William Sanderson, containing a brief discourse of that which passed in the north-east discovery for the space of thirty years—1553-1583. This letter was prepared at the request of Mr. Sanderson.—Hakluyt (2nd edition), i, pp. 523 to 525.

settled in Scarborough and Newcastle-on-Tyne. His son William Sanderson was a merchant of London, who lived to the age of 86, dying in 1570. He married Jane, heiress of T. Wall of London, by Alice Langston, another heiress, and had several children. The eldest was William Sanderson,¹ the munificent merchant adventurer and friend of Davis, a citizen of London, of the Fishmongers' Company. He married Margaret, daughter of Hugh Snedale of Cornwall, by a sister of Sir Walter Raleigh, and had numerous children:—Raleigh, Cavendish, Drake, William, Thomas, Hugh, Anthony, and Jane, wife of Mr. Wolley of the Privy Chamber.² He bore his own arms (paly of six *azure* and *argent* on a bend *sable*, three mullets *or*) quarterly with Skirne, Wall, and Langston, as depicted on the famous globe of Emery Molyneux.

There is a memoir of William Sanderson among the Harleian MSS., which I insert in the accompanying foot note.³ It appears to have been written by a friend in the time of Charles I, in answer to some

¹ William Sanderson had brothers and sisters. Stephen Sanderson, his next brother, had two daughters—Magdalen, married to George Chambers, a merchant adventurer, who died in 1621; and Jane, married to J. Punt of Manningtree. The other brothers were Michael and Thomas. The sisters were Jane, married to Edwards; and Magdalen, wife of John Archer, a merchant of London.

² This account of the family of William Sanderson is from the *Vincent MSS.*, 119, p. 292, in the Heralds' College.

³ The following account of William Sanderson is extracted from the Harleian MSS. 5208, fol. 50-52 (new fol., 29, 30):—

“ William Sanderson, als Sanderzon, borne a gent, bred a Mer-

attack, and shows that the subject of it was a merchant of London of great wealth and high posi-

chant Adventurer under the worthy Thomas Allin, Esquire, Merchant unto Queen Elizabeth for her Marine causes; as was Syr Thomas Gresham, Kt., her Merchant for her Military causes; which said Sanderson was for himself and his said Maister, in Denmarke, Swithland, and Poland. And in Fraunce, Germany, and Netherlands in travaile and trade there and elsewhere many yeares. And in respect of his master's office and service for him was well knowne in Court in the dayes of the Duke of Norffolk, and afterwards in the time of the Lord Burleigh and Leicester. And in that tyme marrying with Sir Walter Raleigh his niece (being his sister's daughter) did—mannage his affaires all the tyme of his prosperity; and did (at severall 4 tymes) stand bound for the said Sir Walter Raleigh for more then a hundred thousand pounds sterling; and also for meere debt more than sixteene thousand pounds at one tyme, taken up in London, most part thereof at usury upon his owne bonds, such was his credite and reputation in those days, as there can be made good prooffe thereof.

“Hee invented, made, printed, and published the great Spheares and Globes, both Cellestiall and Terrestriall, being the first soe published in Christendome, for the honour of his countrie, and good of the Schollers, Gentrys, and Marriners of the same.

“Hee sent severall voyages to search about the North-west Passage unto Chyna, Molucca, Phillipina, and Japan in the South Sea.

“And also severall Adventures unto Virginia with Sir Walter Raleigh at the first discovery therof: all unto his owne very great cost and charge of some thousand pounds starling.

“And also hee was by the Queenes Majestic speciall appointment put in Great Trust in the Businessc of both the Carrick's goods that came to London into Leaden Hall both before and at his Majestic's coming to the Crowne of England.

“And also he did bring unto the Queenes Majestic in ye latter dayes of her Rayne a Present, or Project, by which the late King's Majestic hath received into his Coffers more than £100,000 sterling. And never as yet asking any one penny in recompense (for

tion. Mr. Sanderson's name appears in the oldest book of the Fishmongers' Company, dated 1610,

that his service done) of her nor his late Majestie, neither will he ever doe (as he intends) untill he hath done his Majestie twice better service than that was, which still continueth and bringeth unto his Majestie a yearly revenue of many thousand pounds stock.

"And lately it pleased his late Majestie to comand him, with others, to make a Remonstrance of the business of Exchange with the auncient use, moderne abuse, and their conceived remedies, to be delivered to his Majesty in writing with all convenient speedo, which was p'formed accordingly by these persons soe comanded.

"The Lord Viscount Mandeville.

"Sir Robert Cotton, Knight and Baronet.

"Sir Ralph Madisson, Knight.

"Mr. Williams, his Majesties Goldsmith.

"Wm. Sanderson, Merchant Adventurer.

"Garrit Maleries, Merchant Stranger.

"It is with his Majisties pleasure that these busines bee considered of and reported to him ; therefore let those have notice to bee with mee a Wednesday at two of the clocke, viiiith April 1622. H. Mandeville.

"All these aforesaid are true reports and sufficiently to be proved soe, against any objection made to the contrary by Envy, Malice, or Ignorance, the enemies of all Wisdom, Vertue, and Verity.

"And, lastly, now at this time, he hath presented unto his Majistie, Nobility, and Magistracy, with others of the Privy Councell, a Manuscript and Tratise of Exchange and Royall Exchangers* in his Eminent place of dignity, the which those said last three Uncreated Evills doe impudently oppose and maligne with many assertions and disgraces, which caused these premisses to bee written by a ffriend."

* "And God saw all yt he made, and lo, it was very good."—Genesis i, 35.

and in several subsequent years, and he appears to have died in extreme old age in the year 1638.¹

Mr. William Sanderson took the lead in furthering the despatch of an expedition, among the merchants of London. The west countrymen were represented in the undertaking by Mr. Adrian Gilbert, the whole project being under the patronage of Sir Francis Walsingham, Secretary of the most honourable Privy Council.

We are told by the historian of the voyage that "the setting forth of this action was committed to the care of Mr. William Sanderson", and that "hee commended unto the rest of the company one Mr. John Davis, a man very well grounded in the principles of the arte of navigation, for captaine and chief pilot of this exployt". Davis must, therefore, at this time have been an experienced mariner, and one who had doubtless made many voyages.

There are several interesting entries, which refer to the arctic voyages of Davis in the minute book of the Elizabethan guild of the city of Exeter.² The following minute was recorded at a court of that Corporation, held on January 6, 1585 :—

¹ I am indebted for the above information to the obliging kindness of Mr. W. B. Towse, the Clerk of the Fishmongers' Company. Mr. Towse observes that, at the time of W. Sanderson's death in 1638, he then owed the Company 16 years' quarterage, from which it is inferred that, being an old man, he was unable to attend the meetings of the Company during that period, or since 1622.

² From the work of Mr. William Cotton, *An Elizabethan Guild of the City of Exeter*.

“At this Courte there were certaine Articles brought in by o’ deputie, which were delivered to me by Mr. Carewe Rawleigh,¹ touchinge a pretended voyage to Wyngandacoia, and a noate of the marchantable and other comodities there founde, which being published and reade, o’ deputie did moue the Companie to be venturers that waie. Whereunto the Companie did answero that forasmucho as they were adventurers already with Mr. Adrian Gilberte in a voiage unto China they will not adventure anie more in anie suche voiaiges untill they see that voiage ended or some successe thereof.”

This voyage to China was of course the one about to set forth under the command of Davis. The pretended voyage referred to in the above minute was one that was being fitted out by Sir Walter Raleigh, and which sailed from Plymouth shortly afterwards. It had for its object the colonisation of Virginia, but resulted in failure. The Exeter merchants were too wary to be tempted into embarking their wealth in two expeditions, both so hazardous and involving great risk.

The account of Davis’s first voyage is written by one John Jane or Janes, a merchant who accompanied the expedition, and who appears to have performed the duties of clerk, supercargo, or secretary, on board Davis’s ship, the *Sunshine*. He was also a nephew of Mr. William Sanderson, already alluded to as one of the chief promoters of the enterprise.²

Davis at this time was not only a sailor, but also

¹ The elder brother of Sir Walter Raleigh.

² At least he speaks of Sanderson as his uncle (see p. 40), but the name of Janes does not appear in the Sanderson pedigree at the Herald’s College. In the *Cornwall Visitation* of 1620, a John

a surveyor, for we find that during the twelve days that his vessels were delayed by stress of weather at the Scilly Islands he visited in a boat the numerous islands that compose this group, and "did platte out and describe the situation of all the Ilands, rockes, and harboroughs to the exact use of Navigation, with lynes and scale thereunto convenient."

After leaving the Scilly Islands, land was not again sighted until the 20th of July, 1585, which, as Jane says, "was the most deformed, rocky, and mountainous land that ever wee sawe."

Davis himself writes : "The lothsome view of the shore and irksome noyse of the yce was such as that it bred strange conceites among us, so that we supposed the place to be wast, and voyd of any sensible or vegitable creatures, whereupon I called the same Desolation."¹

This must not be confounded with Cape Desolation on the south coast of Greenland, which was not passed until the 24th. In all probability the land first seen by Davis was to the northward of Cape Discord, on the east coast of Greenland, for after sighting it he coasted along the shore to the southward for two or three days, and then to the west-south-west. Coasting to the north, he entered and named Gilbert's Sound, in lat. 64 deg. 15 min.; then, crossing the strait, which bears his name, he sighted land on the west side, along which he sailed

Jane of St. Dominick, in Cornwall, is mentioned as marrying Elizabeth, daughter of Edward Scawen, who died in 1598.

¹ See page 206.

as far north as lat. 66 deg. 40 min., naming the different places of prominence as he went along after old friends, and old familiar haunts. Thus we have Mount Raleigh, Cape Walsingham, Gilbert Sound, Totnes Road, and Exeter Sound.

After exploring some distance up Cumberland Gulf, where they "sawe many fayre sounds, whereby we were persuaded that it was no firme land, but islands", the season being far advanced, it was resolved to return to England, having first of all thought what was best for the "safeguarde of their credites and satisfying of the adventurers"; and they arrived at Dartmouth on the 30th of September.

On his return from this voyage Davis wrote a letter¹ "To the Right Honorable Sr Ffrances Walsingham, Knight, one of her Ma^{ty}'s most honorable Pryvy Counsyle," which runs as follows :—

"Right honorable most dutyfully craving pardon for this my rashe boldnes, I am herby, according to my duty, to signyfy vnto yo^r honor that the north-west passage is a matter nothing doubtfull, but at any tyme almost to be passed, the sea navigable, voyd of yse, the ayre tollerable, and the waters very depe. I have also found an yle of very grate quantytie, not in any globe or map dyscrybed, yelding a sufficient trade of furre and lether, and although this passage hath bine supposed very impassible, yeat through Gods mercy, I am in experience ann ey wyttnes to the contrary, yea in this most desperate clymate; which, by Gods help, I wyll very shortly most at large revele vnto yo^r honor so sone as I can possible take order for my maryners and shipping. Thus depending upⁿ yo^r honors good

¹ In the Lansdowne MSS., xlvi, fol. 41.

favor, I most humbly comytt you to God this third of October.

“Yor honors for ever most dutyfull,

“JOHN DAVYS.

“3 Oct. 1585,

“John Davy to Mr. Sec. Walsingham.”

This letter, a facsimile of which is produced as a frontispiece to the present work, was written three days after Davis's return to England. It will thus be seen that the energetic explorer set to work almost immediately on his arrival to induce people to join with him in fitting out another expedition for the discovery of the North-West Passage. So well did he succeed, that in six months' time he had obtained a considerable sum of money, besides the requisite number of ships, to enable him with a greater chance of success to carry out his enterprise.

The merchants of the west country appear in this instance to have been the largest contributors to the venture, besides being the owners of the vessels, for, quoting from Mr. Cotton's work,¹ previously referred to, we read the following entry in the minute book of the Exeter Guild:—

“19th April 1586.—Here followeth the names of those persons that did adventure their money with Mr. Adrian Gilbte and Mr. John Davies in a Voiage for the discovery of China, the sixvnth daie of Aprill, in the xxvij yeare of the rayne of or soverayne Ladie Elizabeth.

“The merchants of Exeter contributed	- -	£475	0
„ „ Totnes	„ - -	375	0
„ „ London	„ - -	162	10
„ „ Cullompton	„ - -	25	0

¹ *An Elizabethan Guild of the City of Exeter.*

"The merchants of Charde contributed	-	-	37	10
" Tiverton	"	-	25	0
Richard, Ducke of Hevitree	"	-	12	10
Symon Saunders of Taunton	"	-	12	10
John Yongo of Axminster	"	-	25	0
Thomas Southcott of Calverley	"	-	12	10
Christopher Broderidge of Totnes	"	-	12	10

£1175 0."

It will be seen that for this voyage the merchants of Devonshire contributed a very much larger share than those of London, in addition to which, according to Mr. Cotton, the following merchants of Exeter owned the ships,¹ which we find were the *Mermayde* of 120 "tunnes", the *Sunneshine*, of 60, and the *Mooneshine*, of 35, with "a pynace of 10 tunnes, named the *North Starre*":—

Mr. John Poryam,
 ,, John Applyn,
 ,, Richard Dorchester,
 ,, Richard Jurden,
 ,, William Easton.²

The little squadron sailed from Dartmouth on the 7th of May, 1586, but after crossing the sixtieth parallel of latitude Davis divided his fleet, sending a couple of the ships under Capt. Pope to explore on

¹ I am inclined to think that this statement is inaccurate; for Davis, in his "Worlde's Hydrographical Description", expressly tells us that the *Mooneshine* was owned by Mr. William Sanderson. The *Mermaid* and *Sunshine* were perhaps the property of the Exeter merchants.

² William Eston was master of the *Sunshine* in Davis's first expedition, and sailed with him also in the following one.

the east side of Greenland, while he himself, with the *Mermaid* and *Moonshine*, proceeded up Davis Strait. After sighting Cape Farewell, Davis reached the harbour, on the west coast of Greenland, which he had discovered the previous year, and called Gilbert Sound. Here a pinnace, which had been conveyed across the Atlantic on board the *Mermayde*, was hoisted out and equipped, a small vessel being considered necessary for the exploration of the various sounds and bays it was thought probable they would discover.

At this place they met a great number of natives, with whom they had friendly intercourse. Davis, who is himself the historian of this voyage, says that as many as a hundred canoes or kayaks would come off to the ship at one time. We cannot help being struck at the innocent and unsuspecting nature of these Eskimos, who for the first time came into contact with Europeans, and with the friendly feeling they displayed. We read that they were "very diligent to attend us, and to helpe us up the rocks, and likewise downe. At length I was desirous to have our men leape with them, which was done; but our men did overleape them. From leaping they went to wrestling. We found them strong and nimble, and to have skill in wrestling, for they cast some of our men that were good wrestlers." These natives, in spite of the friendship that appeared to animate them, could not divest themselves entirely of their thievish propensities, which at last reached such a height as nearly to cause a rupture of the

friendly union that existed between them and the English. When he departed, Davis committed an unjustifiable act in kidnapping one of the Eskimos. It may be presumed that the poor fellow did not long survive his captivity, for in a marginal note to the narrative, inserted either by Hakluyt or by Davis himself, we read: "One of the natives taken, which afterwards died." An interesting discovery was made during the stay of the ships in Gilbert Sound, namely, a grave over which a cross had been laid. It is possible that this spot was the last resting place of some of the old Norman colonists of South Greenland, those settlers in the East and West Bygd, whose fate, to this day, is involved in mystery.

In consequence of some of the men growing sick and feeble, and, as Davis expresses it, "withal hopelesse of good successe", he determined to send the *Mermaid* home, while he, in the *Moonshine*, would "proceed in this action as God should direct me". Anchoring in a large fiord near old Sukkertoppen, on the coast of Greenland, his ship was revictualled from the *Mermaid*, which shortly after sailed for England, where she arrived safely in due course. Davis sailed to the westward, and made the land on the opposite side of the strait, near Exeter Sound; but, curiously enough, he fails to recognise that this was the land he had discovered during his previous voyage, or, if he does, he makes no mention of the fact. Sailing to the south-west, he sighted "a fayre promontory in 65 degrees, having no land to the

south". This could be no other than the headland called by him in the preceding year the Cape of God's Mercy. He continues, "Heere we had great hope of a through passage," meaning the North-West Passage, the "hope" being, without doubt, Cumberland Gulf, up which he had sailed the previous year, yet he makes no mention of having been here before, nor does he attempt to search for "the passage" up this gulf, but, continuing his course to the southward, he landed on some of the numerous islands on the north side of Frobisher Bay. He then sailed southwards, passing the entrance into Hudson Strait, but without observing it, and sailed along the coast of Labrador. Here they succeeded in catching an immense number of cod,¹ great quantities of which they salted, and took home to England. Some were sent as a sample to the Lord High Treasurer. They arrived in the beginning of October, finding that the *Sunneshine*, which vessel Davis had sent to explore along the east coast of Greenland, had arrived some few days before them; but the unfortunate little pinnace, the *North Starre*, which had been placed under the orders of the captain of the *Sunneshine*, had been lost sight of in a great storm on the night of the 3rd of September, and was never seen again.

Davis, in his letter to Mr. Sanderson reporting his arrival in England, states that the *Sunneshine*, after going to Iceland, had been to Greenland, and thence

¹ Being unprovided with fishing tackle of any description, hooks were made from long spike nails.

to Estotiland, which was the name then given to Labrador. But after a very careful perusal of Mr. Morgan's narrative of the cruise of the *Sunshine*, I cannot but think that Davis must have been labouring under some error when he made the statement; for in Morgan's account it is very clearly recorded that after leaving Iceland they sighted Greenland, and, sailing along the coast of Desolation, eventually anchored in Gilbert Sound. Here they remained until they took their final departure for England. Had they crossed Davis Strait and reached Labrador, some mention of it would assuredly have been made. There is another point on which I cannot reconcile the two documents. Davis says, in his letter just quoted, that the *Sunshine* arrived at Dartmouth on the 4th of October, whereas Mr. Morgan, who was actually on board the ship, concludes his narrative as follows: "The 3 (of October) we coasted all along the shore, and the 4 and 5. The 6 of the sayd moneth of October we came into the river of Thames, as high as Ratcliffe in safetie, God be thanked." Surely if they had touched, even for a few hours, at Dartmouth, such an important event would have been recorded.

The indefatigable Davis, immediately on his return from this voyage, renewed his advocacy for the dispatch of another expedition. He was encouraged in this by the Lord High Treasurer and Sir Francis Walsingham, besides being supported by his former friends, Mr. Wm. Sanderson, Mr. Adrian Gilbert, and a few of the London merchants. But, as he

tells us, "all the westernne marchant adventurers fell from the action".

That it was proposed to these latter is evident, from the following minute of the court of the Elizabethan Guild at Exeter.

"16 Dec. 1587.—Also at the same Courte there was made a coppie of certaine articles under divers of the Companies handes concerninge a newe adventure with Mr. Adrian Gilberte and Mr. John Davyes to China and Cathay, where-uppon Mr. Governo' did move the whole Companie what they intended to do therein, and praied there resolute answere, who' agreed that Mr. Nicholas Martyn, Mr. Nicholas Spicer, Mr. Sampforde, Mr. Hackwell, and Mr. Jasper Horssey, shall consider of all the accomptes of the voiage heretofore made by the said Adrian Gilbte and John Davies, and shall also set douno what they think fit to be answered to the said articles with as much speade as conveyniently they maie, which said articles and p'res were by Mr. Governo' delivered to Mr. Sampforde in open Courte."

The unprofitable result of Davis's second voyage, together with the loss of a bale of cloth, mentioned in the following minute, would, in all probability, account for the withdrawal of the Exeter merchants from venturing their money in a third expedition. The minute runs as follows :—

"15 Feb. 1588.—It is ordered by the companie then presente, that Mr. Nicholas Spicer, John Hackwell, Richard Dorchester, and Jasper Horssey, should deale with Mr. William Martyn for the examination of the accomptes of the last voiage in the *Marmaide* to China, and that the same be brought in orderly made at the next Courte; and also to enquire of a ballet of cloth reported to be missinge, that restitution maie be made unto every adventurer accordinge to the p'porcon of the same."

The successful capture of fish made by Davis during his last voyage off the coast of Newfoundland was, no doubt, used as an incentive for the despatch of another expedition, the adventurers being unwilling a third time to risk their money without seeing a fair prospect of gain.

A third voyage was therefore ultimately decided upon, and the conduct of it was again entrusted to Davis, who had under his orders three ships, in one of which he was himself to proceed on his voyage of discovery, whilst the two others were to be employed entirely for fishing. The value of their cargoes, it was hoped, would be not only sufficient to defray the expenses of the expedition, but also realise a small profit to the company. The ships employed were the *Elizabeth* of Dartmouth, the size or tonnage of which is not mentioned; the *Sunneshine* of London, presumably the one owned by Mr. Sanderson, and therefore between 50 and 60 tons; and a little pinnace called the *Ellen* of London.

Although we have two different accounts of this voyage, one written by Davis himself, and one by Mr. Sanderson's nephew, John Jane, we are not told in which vessel Davis sailed, and which were the two ordered to fish.

I am inclined, however, to think that Davis elected to proceed on his adventurous cruise in the *Ellen*, the smallest of the three, as he concluded she would be the handiest and best for ice navigation. From various allusions made to this vessel in Jane's narra-

tive, it seems more than probable that she did not exceed 20 tons burthen !

Sailing from Dartmouth on the 19th of May, the little squadron sighted land on the 14th of the following month. This must have been the coast of Greenland, between the present Danish settlements of Frederikshaab and Fiskernaes. Cape Farewell and the south coast of Greenland had therefore been rounded without being seen.

Steering to the northward the three ships came to an anchor, "among many low islands", in latitude 64 deg. on the 16th of June.

Although not mentioned, their anchorage appears to be, from the position and description, no other than the Gilbert Sound that had been visited by Davis during his two preceding voyages. Here they had a little trouble with the Eskimos ; but this seems to have been caused by the imprudent conduct of the master of the *Sunshine*, who made a prisoner of one of them, and carried him on board his ship. What became of him is not related.

On the 21st they sailed from this anchorage ; Davis on his voyage of discovery northwards, the other two vessels to prosecute the fishery, the appointed place for which was to be on the west side of the strait, between the 54th and 55th parallels of latitude. The two vessels sent to fish sailed for England sixteen days after parting company with their leader, although the captains had faithfully promised Davis that they would not depart until his return, and

that they would at any rate remain for him until the end of August.

Experiencing "very hot weather", Davis sailed northwards, in a "free and open sea".

In latitude 67 deg. the land was visible on both sides of the ship, that is, to the eastward and westward, so that Davis was under the impression that he was sailing up a gulf. He was then abreast of the present Danish settlement of Holsteinborg. Sailing onwards, however, the passage increased in width, so that he could not see the western shore.

Off the Island of Disco they communicated with a number of Eskimos, thirty of whom came out to them in their kayaks, bringing skins, fish, and birds, which they bartered for nails, bracelets, and knives.

With scarcely any hindrance from the ice Davis continued to sail in a northerly direction along the Greenland coast, until he reached the latitude of 72 deg. 12 min. N., where he found "the sea all open to the westwards and northwards". The natives here come off in great numbers, as many as a hundred at a time, all eager to exchange their commodities for English goods.

The wind coming from the northward, compelled Davis to leave this coast and sail to the westward, which he was of course the more inclined to do, as his great object was the discovery of a north-west passage.

The highest point of land reached on the Greenland coast was named by Davis, after his friend and patron, "Sanderson, his hope," as it was there he

had the greatest hope of a passage. Sanderson's Hope, the lofty headland near Upernivik, is a place well known to modern Arctic voyagers. The lamented Sherard Osborn, the warm and steady friend to northern enterprise, thus described the scene, as the squadron in which he served passed Sanderson's Hope:¹—

“June 24, 1850.—The squadron was flying north in an open sea, over which the bergs of every size and shape floated in wild magnificence. The excitement, as we dashed through the storm, in steering clear of them, was delightful from its novelty. Hard a starboard! Steady! Port! Port you may!—and we flew past some huge mass over which the green seas were fruitlessly trying to dash themselves. Then we hauled in for the land, and, passing into a channel some four miles in width, we found ourselves running past the remarkable and lofty cliffs of ‘Sanderson his Hope’—a quaint name given to the point by the ‘right worthie Master Davis’, in honour of his patron, a merchant of London. Well worthy was it of one whose liberality had tended to increase England’s maritime fame; and the Hope’s lofty crest pierced through the clouds which drove athwart its breast, and looked afar to see ‘whether the Lord of the Earth came not’. Under its lee the water was a sheet of foam and spray from the fierce gusts which swept down ravine and over headland, and against the base of the rocks flights of innumerable wild fowl marked a spot famous among Arctic voyagers.”

We, in H.M.S. *Alert*, passed the Hope on the 21st of July, 1875, and boats full of eager sportsmen were some hours under the steep precipitous cliffs, on which myriads of looms were congregated.² It is

¹ *Stray Leaves from an Arctic Journal*, (2nd ed.), pp. 29, 30.

² See my *Great Frozen Sea*, p. 45.

truly a well known spot, this extreme northern point of brave John Davis, which he reached on the 30th of June, 1587.

Steering to the westward, the southern extreme of the middle pack of Baffin's Bay was encountered, "a mighty banke of yce", as described by both Davis and Janes. They were beset in it for several days. Eventually the little vessel was forced through the pack, and Mount Raleigh, on the western side of the strait, was sighted on the 19th of July.

On reaching this land Davis reports that "there was no yce towards the north, but a great sea, free, large, very salt, and blue, and of an unsearchable depth".

Sailing along the coast to the southward, they reached the rendezvous that had been appointed, where the ships were to assemble, but, failing to find them, they shaped a course for England, arriving at Dartmouth on the 15th of September, "giving thanks to God for our safe arrivall."

Thus ended Davis's last and most memorable voyage for the discovery of a north-west passage. That it failed in its object is not to be wondered at, considering the circumstances under which it was undertaken; indeed the marvel is that he succeeded in doing so much. Enterprising as were the merchant adventurers of those days, they did not feel justified in despatching another expedition, after the failure of three successive voyages, and Davis had therefore to remain inactive, though not content with the laurels he had gained during his three trips to the

Arctic regions. He, of course, had to experience a certain amount of captious criticism and ill-natured abuse from "the stay-at-home-at-ease party", regarding the failure of his enterprise. He answers these detractors in his *World's Hydrographical Description*, published in 1595, as he says, "to stay this objection, why hath not Davis discovered this passage, being thrice that wayes imploied?"

It is evident, from a letter written by Baffin, that Davis was blamed by some for his want of success. This letter was written in 1616, on Baffin's return from his adventurous and memorable voyage to the head of the bay which now bears his name. It is addressed to "the Right Worshipful John Wostenholm, Esqre," etc., and in it Baffin magnanimously defends his brother navigator from the imputations that had been cast upon him. He says, alluding to Davis Strait, "we found it to be no other than a great Bay, and no hopes of a Passage; however Mr. Davis was not to be blamed for his Report, the Sea being open, and of an unsearchable depth, as far as Hope Sanderson."

All honour to noble William Baffin for this generous sentence. We can, in these days, fully appreciate the desperate and almost reckless gallantry which Davis displayed in navigating his little bark amidst unknown and constantly recurring dangers, and the skill and seamanship which enabled him to bring her home in safety across the Atlantic. This last voyage of his stands out conspicuously as a masterly and daring feat that in after years bore

good fruit. It was a guide to others, and it undoubtedly lighted Master Hudson "into his strait".¹ Davis's *Traverse Book*, given in its entirety from page 49 to 58, is a detailed record of the voyage from his own pen, and is the model on which the log books of ships have since been formed.

On his return it became the duty of Davis to reconcile his geographical discoveries with the previous work of Frobisher, and, if possible, with the old map of the Zeni, which was still esteemed as an authority. Unfortunately the large scale map which was prepared by Davis is now lost. We only have the results, as delineated by himself on the Molyneux globe,² and on the "new map" of the world, prepared under the superintendence of Wright.³ The latter is reproduced in the present volume.

Davis had to harmonise his work with universally received errors. Frobisher had taken with him the old map of the Zeni, which was first published in 1558. When he sighted Greenland he assumed that it was the Frisland of the Zeni. Davis, when he reached the Greenland coast, in 61 deg. N., at once

¹ Luke Fox says "Davis did, I conceive, light Hudson into his Straights."

² Davis fathers the delineation of his discoveries on the Molyneux Globe in his "World's Hydrographical Description". See page 211.

³ On the "New Map", the discoveries of Davis are shown exactly as on the Globe. Davis evidently had a hand in both. A passage in the "Certain Errors" of Wright, compared with the descriptive title on the Map, justifies the inference that Wright was the author of that Map of the World, which is the first that

saw that it was not the Frisland of the Zeno map, while it was too far south to be the Engroenland of the Zeni. So he named it Desolation, and the more northern part he called the London Coast. But the narrators of Frobisher's voyages gave no indication of longitude, so Davis assumed that the discoveries of his predecessor were on this coast. He therefore made Frobisher's strait pass through Greenland, leaving an island to the south. He would the more readily do this because he himself did not see the land between 61 deg. 30 min. N. and 64 deg. 15 min. N. On the north side of this imaginary strait he placed "Meta Incognita", of Frobisher, as well as his own "Desolation" and "London Coast". On the island he has only one name, "Reg. Elizabeth Foreland", in the place of Cape Farewell. Owing to the

was drawn in England on the projection, the principle of which Wright discovered and made known.

Title of "New Map".

"Thou hast here, gentle reader, a true *hydrographicall description* of so much of the world as hath beene hitherto discovered and is come to our knowledge, which we have in such sort performed, yt *all places herein set down have the same position and distances that they have in the globe, being therein placed in same longitudes and latitudes which they have in this chart*, which, by the ordinary sea chart, can in no wise be performed."

Wright's "Certain Errors in Navigation".

"Suppose a spherical superficies with meridians, parallels, rumbes, and the whole *hydrographical description* drawne therefrom, to be inscribed on a concave cylinder, these axes agreeing in one . . . In this nautical planisphere thus conceived to be made, *al places must needs bee situate in the same longitudes and directions or courses, and upon the seme meridians, paralels, rumbes that they were in the globe.*"

small scale of the Molyneux globe there was not space for all the names given by Davis in his narrative. The names inserted on the Greenland side are, from north to south :¹—

Hope Sanderson, 72° 41' N.

London Coast.

Lord Darcie's Islands.

Desolation.

Meta Incognita.

Frobisher Strait.

Reg. Elizabeth Foreland, 61° 30' N.

The latitudes are from the "Index Gæographicus," made for the globe by Robert Hues. The mistake of placing "Meta Incognita" and "Frobisher's Strait" on the Greenland side was repeated on the map of Hudson in 1612, and others. Frisland is placed in 62 deg. N., east of Desolation; but the west side of Greenland, up to Hope Sanderson, which had been surveyed by Davis, was shown correctly on the Molyneux globe, and so passed into all maps.

On the west side of Davis Strait, which is also shown correctly by Davis, the following names are given on the Molyneux globe :²—

C. Bedford.

Sanderson's Tower.

Mount Rawleigh, 66° 40' N.

Cumberland Isles.

¹ Gilbert Sound, mentioned in the narrative, is not on the Globe.

² Cape Walsingham, Totnes Road, Exeter Sound, Dyer's Cape, Cape God's Mercy, Cape Chidley, and Darcies Island; names given in the narrative to places on the west side of Davis Strait, are not on the Globe.

Lumley's Inlet.

Warwick Foreland.

"A furious overfall," 60° N.

The "furious overfall" of Davis, which is not, however, mentioned by that name in his narrative, is clearly the entrance to Hudson Strait. In the narrative of the third voyage is the following passage: "We passed by a very great gulfe, the water whirling and roing, as it were the meeting of tides" (p. 47). This of course is the "furious overfall" of the Molyneux globe, and both are Hudson's Strait. Davis, like Frobisher, uses the nomenclature of the Zeno map, and both Estotiland and Frisland are on the globe. Estotiland is placed south of Hudson Strait.

Thus were the discoveries of Davis placed on permanent record on the globe, and on the "new map", while an attempt was made by the half light of the knowledge of those days to harmonise the new work with the assumed results of previous voyages. The narratives of the northern voyages of Davis were first printed in 1589 in Hakluyt's *Principall Navigations*.

We next find Davis joining the squadron of the Earl of Cumberland off the Azores in August 1589. His history, from his return from the Arctic regions until this date—a period of about two years—remains a blank. Nor can it be satisfactorily ascertained how it came about that he joined his fortunes to those of the Earl. In the account of the voyage at page 65, we read that "Master John Davis, with shippe, pin-

nesse and boate, joined the fleet." By this it would appear that Davis was himself in command of a couple of vessels, for the "boate", it may be presumed, was only such as could be carried on board one of the ships. I am inclined to think that these vessels were the property of Mr. Sanderson, who was ever a firm friend and patron to Davis. Moreover, it is stated that with Davis was a Captain Markesburie, in command of a ship belonging to Sir Walter Raleigh, named the *Barke of Lime*, and as it is well known that a great friendship existed between Raleigh and Sanderson, who were connections by marriage, it is more than probable that their ships were sent to sea together, to act in concert one with the other. Be this as it may, it is quite certain that they attached themselves to the squadron under the Earl of Cumberland, and participated in the various actions fought by that nobleman—an account of which will be found from pages 65 to 92 of this volume. How or when Davis returned to England is not mentioned, but that those serving in the fleet endured great hardships, from a scarcity of fresh water, is evident from the narrative, which was written by Mr. Wright,¹ the hydrographer.

¹ Edward Wright was born at Gaveston in Norfolk, in about 1560. In 1589 he accompanied the Earl of Cumberland in his expedition to the Azores, wrote the narrative of the voyage, and constructed some new charts. He was a very eminent mathematician, and discovered the true method of projecting charts by increasing the distance between meridians, which is erroneously attributed to Mercator. In 1599 he published a book entitled

This is the only voyage out of twelve sent forth by the Earl of Cumberland that Hakluyt gives room for in his work. Purchas, in his *Pilgrimes*, supplies an abstract of all the twelve voyages. His account of this particular expedition agrees in the main with that given in Hakluyt, and reprinted in this volume. Still he supplies some additional information, which Hakluyt has failed to publish. For instance, the latter authority makes no mention whatever of a severe fight, which seems to have followed shortly after the engagement at the Island of St. Mary's,¹ in which two men were killed and sixteen wounded. Reverting to this action, Purchas tells us: "But a greater losse followed, while the Earle in person sought to get the other ship, Captaine Lyster rashly disvaluing the enemies force, the barre also detayning them on ground, in the midst of danger from the enemy, to the losse and hurt of eightie men. His lordship received three shots upon his target, and a fourth on the side, not deepe; his head also broken with stones, that the blood covered his face, both it and his legs likewise burned with fire balls."²

Certain Errors in Navigation Detected and Corrected, the second edition appearing in 1610. He also, in conjunction with Henry Briggs, the Professor of Geometry at Oxford, promoted the introduction of the use of logarithms, and translated Napier's *Logarithmorum Descriptio* into English. He was preceptor to Henry Prince of Wales, and had a very elaborate celestial globe constructed for his use. In 1616 he received an appointment from the East India Company to perfect their charts, with a salary of £50 a year; but died in London a few months afterwards.

¹ See page 77.

² Purchas.

This was a very serious loss, and one of such a character that it is difficult to form any idea as to the reason of its omission from the account written by Mr. Wright.

Purchas also, in describing the extremities they were reduced to from the scarcity of water, tells us that ten or twelve died every night; whilst during the tempestuous weather encountered on the passage home¹ we are told in the same account that, presumably by a heavy sea, "His lordship's cabin, the dining roome, and halfe decke became all one, and his lordship was forced to make a new lodging in the holde."

Thirteen prizes altogether were captured by the squadron during this cruise, the most valuable of which, however, was wrecked off the coast of Cornwall, and only a portion of the goods on board was saved.

Davis, we may suppose, participated in the profits derived from the voyage, but whether he remained on shore for the next eighteen months, enjoying the fruits of his labour, or whether he kept the sea, is uncertain. It is more than probable that the latter was the case, for in the State Papers of 1592 we find the following statement. A ship called the *Uggera Salvagnia* had been seized by vessels commanded by T. Middleton, Erasmus Harvey, and John Davis. She contained goods belonging to Philip Corsini and other Italian merchants. There was a lawsuit. Sir Walter Raleigh acted on be-

¹ See page 86.

half of Davis, and a compromise appears to have been arrived at in February 1591. Of course this may have been one of the vessels captured by Davis whilst serving under the Earl of Cumberland, but by Sir Walter Raleigh appearing for Davis it would seem that the latter was absent from England during the law suit, and if absent, then probably engaged in some seafaring enterprise.

The next we hear of Davis is occupying an important position as Captain of the *Desire*,¹ one of a squadron destined for a voyage to the South Sea under the command of Thomas Cavendish, who had recently returned from a successful voyage round the world. Davis himself gives his reason for joining this expedition. He says that such was his vehement desire for the performance of the passage round America that this motive alone induced him to go with Cavendish. He adds that Cavendish promised that when they reached California, he should have a pinnace, with his own bark, to search for the passage on the back parts of America.² Thus this voyage also, so far as Davis was concerned, may be looked upon as an attempt to achieve the great enterprise which the gallant navigator had so much at heart.

Davis's old friend and follower, who had accompanied him in two out of his three Arctic voyages, sailed in the *Desire*, and wrote the history of the voyage. The little fleet, numbering five ships, sailed

¹ The same vessel in which Cavendish had circumnavigated the globe.

² Preface to the *Seaman's Secrets*.

from Plymouth in August 1591. It consisted of the Admiral's ship the galleon *Leicester*; the *Roe Bucke*, Captain Cocke; the *Desire*, Captain Davis; the bark, *Daintie*, Captain Cotton; and the *Black Pinnace*, Captain Tobie; carrying in all a force of about 400 men. The bark was the property of Davis and Adrian Gilbert.

The year 1591, in which this fleet sailed from Plymouth, was memorable in the annals of naval enterprise, for it was the same year in which the first English voyage to the East Indies was undertaken, led by Raymond and Lancaster.

In spite of the brilliant success of Cavendish in his voyage of circumnavigation, in 1586-88, he does not appear to have been gifted with the qualities which the leader of a great enterprise should possess. In his second expedition, after sacking several places along the coast of Brazil, the Strait of Magellan was entered on the 14th of April 1592, from which time commenced the series of disasters that eventually terminated in the total failure of the expedition. The men suffered from scurvy, cold, and the want of good provisions, to such an extent that many died, and to add to their misfortunes the Admiral parted company with the rest of the squadron. The *Desire* and *Black Pinnace* were lost sight of during the night, whilst the *Roebucke* shortly afterwards deserted him. Although Cavendish, with almost his dying breath, accuses Davis of having basely deserted him, there is really no reason to suppose that such was the case; for it is very clearly recorded by the

chronicler of Davis' voyage that the Admiral was lost sight of in the night ; but " whether we lost them or they us we protest we know not". It is, however, very evident that they remained in the Straits of Magellan and visited the different rendezvous in full confidence of again meeting their Admiral, and that Davis attempted no less than three times to sail into the South Seas, but was invariably driven back by strong north-westerly gales, in one of which the *Black Pinnesse* was lost sight of and never afterwards seen. It was not until the end of the year 1592 that Davis relinquished all hope of prosecuting his voyage to the westward, and that he sailed from Port Desire, shaping his course homewards. Cavendish had long ere this abandoned all idea of sailing into the South Sea, and had died, probably of a broken heart, some eight or ten degrees to the northward of the Equator on his way home. Davis' troubles did not end with his departure from the Strait of Magellan, for several of his men were killed by the Portuguese on the Coast of Brazil, whilst others were lost in a boat that never returned. To add to their miseries, the stock of dried penguins that had been laid in " began to corrupt".

In this wretched state they at length arrived at Berhaven in Ireland on the 14th June 1593. Out of the seventy-six that had sailed in the ship from England two years before, only Captain Davis and fifteen men lived to return.

Purchas, in a high-flown peroration, immediately preceding Master Cavendish's own account of his

voyage, refers to the supposed desertion of Davis in the following words.

“Some passionate speeches of Master Caudish against some private persons not employed in this action, I have suppressed, some others I have let passe ; not that I charge Captaine Davis or others, but that it may appeare what the Generall thought of them. Master Hakluyt hath published Master Jane’s report of this voyage, which makes more favourable on Captaine Davis his side. If hee did deale treacherously, treacherie found him out, as in his last voyage before is declared. If any thinke the Captaine here to conceive amisse, I shall be willing to have the most charitable conceit, and therefore remit the Reader to Master Hakluyt’s Relation aforesaid, for his apologie.”

Cavendish’s account of the voyage appears to have been written on his death-bed and is addressed to Sir Tristram Gorges, whom he names as his executor. It is only necessary here to allude to that part of his narrative which has a distinct reference to Davis. After complaining in the most bitter and querulous manner of the unfortunate issue of the enterprise, he goes on to say—

“The *Roe-bucke* left me in the most desolate case that ever man was left in; what is become of her I cannot imagine: if shee bee returned into England, it is a most admirable matter ; but if shee bee at home, or any other of my goods whatsoever returne into England, I have made you onely Possessor of them. And now to come to that villaine that hath beene the death of me, and the decay of this whole action—I meane Davis,—whose onely treacherie in running from me, hath beene an utter ruine of all ; if any good returne by him, as ever you love mee, make such friend as he of all others may reape least gaine. I assure myself you will bee carefull in all friendship of my last

requests. My debts which be owing be not much, etc. But I (most unfortunate villaine) was matched with the most abject minded and mutinous companie that ever was carried out of England by any man living."

After describing the voyage to Port Desire and the Strait of Magellan, he relates, in the following words, the desertion of Davis.

"We were beaten out of the Strait with a most monstrous storme at West-South-West, from which place we continued together, till we came in the latitude of fortie-seven, in which place Davis in the *Desire*, and my Pinnesse lost me in the night, after which time I never heard of them, but (as I since understood) Davis his intention was ever to run away. This is Gods will, that I should put him in trust, that should be the end of my life, and the decay of the whole action. For, had not these two small ships parted from us, we would not have miscarried on the coast of Brasile; for the onely decay of us was, that wee could not get into their barred Harbours. What became of these small ships, I am not able to judge; but sure, it is most like, they went backe againe for Port Desire, a place of reliefe, for two so small ships. For they might lye on ground there without danger, and being so few men, they might relieve themselves with Seales and Birds, and so take a good time of the yeere, and passe the Streits. The men in these small ships were all lustie, and in health: wherefore the likeliest to hold out. The short of all is this: Davis his onely intent was utterly to overthrow me, which he hath well performed."

Before his death, which occurred on the voyage home, Cavendish made his will, bequeathing among other items the *Desire*, the ship commanded by Davis, to Sir George Cary. This is mentioned in the following words, in his letter to Sir Tristram

Gorges—"I have given Sir George Cary the *Desire*, if euer shee returne, for I alwayes promised him her, if shee returned, and a little part of her getting, if any such thing happen. I pray you see it performed."

By this it would appear that the *Desire* was the property of Mr. Candish;¹ the *Daintie* belonged partly to Mr. Adrian Gilbert and partly to Davis, but we are not told who owned the other two ships; they either belonged to Cavendish or were the property of a company of adventurers, who had subscribed together in order to equip and dispatch this expedition. I am inclined to think that the *Roe-buck* was the property of Sir George Cary, as also were some of the guns in the galleon, for in the latter part of his letter, Cavendish says he has given instructions to his master "to see his peeces of ordnance delivered unto him (Sir George) and if the *Roebucke* be not returned, then I have appointed him to deliver him two brass peeces out of this ship." He concludes his letter—"Beare with this scribbling, for I protest I am scant able to hold a pen in my hand."

There is no date to this letter, but it must have been written during the homeward passage, and to the northward of 8 deg. N. latitude, where he mentions the death of "his most dearest cousin" John Locke. Cavendish himself must have died a few days afterwards.

There is another narrative of this voyage, written

¹ See page 281.

by one "Anthonie Knivet", who appears to have been one of the crew of Cavendish's ship. The account of his wonderful adventures is so exaggerated, that little or no reliance can be placed in the accuracy of his statements; but he testifies, at the very commencement of the voyage, to the mutinous spirit displayed by the men, and the general laxity of discipline that prevailed in the squadron. The only reference made to the desertion of Davis is as follows: "That day that we departed from Port Desire, the Generall sent for all the masters of the ships and commanded them that till midnight they should keepe their course with him, and that when he should shew them two lights, then they should cast about and beare in with the shoare, but Davis which was Captain of the *Desire*, and Tobie, Master of the *Pinnasse*, did deceive us, and went for the Straits, as I was enformed afterwards."¹

The way in which this man Knivet was separated from his ship does not speak much in favour of the humanity of Captain Cavendish. After having thrice narrowly escaped being thrown overboard as dead, and having lost three toes from one foot and four from the other from frost bite, he was reduced to such a miserable state from scurvy that on the arrival of the ship at the Island of St. Sebastian,² on the

¹ This is not a true statement; for, according to Cavendish's own account, and also that of John Janes, the ships were separated on their *return* voyage to Port Desire, and *not* the day after their departure from it.

² About fifty miles south-west of Rio de Janeiro.

coast of Brazil, he tells us, "The first thing that was done the sicke men were set on shoare to shifte for themselves ; twentie of us were set on shoare ; all were able to go up and downe, although very weakly, but (I alas !) my toes were raw, my body was blacke, I could not speake nor stirre. In this case I was layed by the shoare side, and thus I remayned from five of the clocke in the morning, till it was betweene eleven and twelve of the clocke, that the sunne came to his highest, and the extreme heate of the sunne pierced through my body, whereby I came to mysele, as a man awaked from sleepe, and I saw them that were set on shore with me, lye dead and a dying round about me ; these men had eaten a kind of pease, that did grow by the sea-side, which did poyson them." It is unnecessary to follow this man in his wonderful adventures amongst savages and cannibals, and his numerous hair-breadth escapes both on land and by sea ; suffice it to say that, after twelve years' wanderings in South America, he eventually reached his native country, where he published an account of his travels, in comparison to which the adventures of Baron Munchausen are as every day occurrences. His name has only been introduced here as bearing upon the supposed desertion of Davis, and also because his statements regarding the discontent of those engaged in this expedition are fully corroborated, not only by the historian of Davis's voyage, but also by Cavendish himself.

I believe that the true version of the apparent

disloyalty of Davis is not that he wilfully abandoned his chief, but that being separated from him in the fog off Port Desire, he did not use his utmost endeavours to rejoin him, knowing that Cavendish had relinquished all further ideas of prosecuting the voyage into the South Seas. From Davis's subsequent actions no one can, for one moment, accuse him of not zealously attempting to carry out the object of the expedition, having, in spite of great hardship and suffering, and adverse winds and currents, thrice attempted to push his way into the South Seas. He gives his own account of the separation in his dedication to the *Seaman's Secrets*.¹

Davis evidently anticipated that a charge of desertion would be brought against him, otherwise he would not have proposed the signing by the ship's company of a testimonial acquitting him of having purposely and designedly abandoned his general.² It is a curious fact that John Jane, the author of the account of the expedition, a tried and trusty friend of Davis, who had accompanied him in most of his voyages, did not sign this paper. It bears only forty signatures, out of the seventy-six that composed the crew of the *Desire* when she left England ten months before.

That Davis himself wrote an account of this voyage, together with a description of the Strait of Magellan, is evident from allusions made to it in his "Worlde's Hydrographical Description". It is much

¹ See pages 280 and 281.

² See page 103.

to be regretted that this account and his survey are nowhere to be found.

According to Davis, Port Desire was named as one of the rendezvous where the ships were to assemble in case of separation, and thither Davis immediately went on losing his chief, but Cavendish stood on for Brazil. Had he gone to Port Desire he would have found two of his missing squadron, the *Desire* and the *Black Pinnace*.

Taking every thing into consideration, Davis cannot, with justice, be accused of having wilfully deserted his commanding officer. He lost him in a thick fog, and afterwards did his utmost, according to his own judgment, to rejoin him.

It was during this period that Davis discovered the Falkland Islands, an honour that has also been accredited to Sir Richard Hawkins, who, however, did not sight them until 1594, or two years *after* they had been discovered by John Davis.¹ Admiral Burney adopted the name of "Davis's Southern Islands" for the Falkland Isles.²

John Davis, after his return from the unfortunate voyage to the Straits of Magellan in 1593, was engaged in the preparation of two important nautical works; one entitled the *Seaman's Secrets*,³ the first

¹ See note 2, page 108.

² See Burney's account of the second voyage of Cavendish, in his *Voyages to the South Sea*, vol. ii, chap. vii, pages 98 to 107.

³ Entered at Stationers' Hall on September 3rd, 1594, by the printer, Thomas Dawson. See *Stationers' Register*, ii, page 312. No copy of this first edition has been found. I have used the second edition of 1607 for the reprint in this volume.

edition of which appeared in 1594, and the other the *Worldes Hydrographical Description*, which was published in May 1595.¹

When the age of discovery was commenced with the voyages of Columbus and Vasco da Gama, the practical importance of astronomical studies became apparent; and the demand for instruction in the art of navigation kept increasing, as the thirst for maritime enterprise extended from the Iberian peninsula to France, England and Holland. Regiomontanus,² whose real name was Johann Muller, a native of Koenigsberg in Franconia, and the pupil of Purbach³ of Vienna, computed the astronomical Ephemerides for the years 1475 to 1506, which were used by Da Gama and Columbus. Martin Behaim of Nuremburg, who invented the application of the

¹ There is a copy in the Grenville Library at the British Museum, and another in the Lenox Library at New York. It was reprinted in the second edition of Hakluyt in 1812.

² Regiomontanus was born in 1436, and studied astronomy under Purbach at Vienna. He completed the translation of Ptolemy's *Almagest*, which had been begun by Purbach. In 1461, Regiomontanus went to Italy, and remained there until 1464, when he succeeded his old master as Professor of Astronomy at Vienna. While in Italy he composed his work on the solution of plane and spherical triangles, with a table of natural sines. Sixtus IV, who contemplated a reformation of the calendar, made Regiomontanus Archbishop of Ratisbon. He then went to Rome, where he died in 1475.

³ George Purbach was born in 1423. He was Professor of Astronomy at Vienna, constructed several astronomical instruments, and commenced the calculation of a table of sines and the translation of the *Almagest*, which were completed by his pupil. He died in 1461.

astrolabe to navigation, and constructed the earliest globe now extant, was a pupil of Regiomontanus. Spanish students of navigation were required to study the works of Purbach and his pupils, for the next two hundred years;¹ and it was not until the middle of the sixteenth century that a general work on navigation was compiled for the use of seamen.

The first practical book on navigation² was written by Pedro de Medina, and published at Valladolid, with the title *Arte de Navegar*, in 1545; and the second appeared at Seville, in 1556, being the work of Martin Cortes, entitled "a brief compendium of the sphere and of the art of navigating, with new instruments and rules."³ The books of

¹ In 1636 the course of instruction ordered to be given by the Cosmographer of the Indies was as follows:—He had to deliver three yearly courses of lectures, which were attended by young officers and pilots. The course for the first year was arithmetic and the *De Sphæra Mundi* of Sacrobosco. The second year's course comprised the six first books of Euclid, arcs and chords, right sines, tangents, and secants, the Alphonsine Tables, Purbach's theory of the planets, and the book of spherical triangles by Regiomontanus. The third year's course included the *Almagest* of Ptolemy, cosmography and the art of navigation, the use of the astrolabe and its mechanism, the use and adjustments of other instruments, and the method of observing the movements of the heavenly bodies.

See the *Ordenanzas del Consejo Real de las Indias por el Rey Felipe IV* 1636, ccxxviii to cxliii. Also *Recopilacion de las leyes de los reynos de las Indias, Carlos II*, tom. i, p. 185 (Lib. ii, titulo xiii, Leyes a 5).

² The *Suma de Geografia* of Enciso is scarcely entitled to rank as a practical book for ordinary use, although it contains tables of declination.

³ *Breve compendio de la Sphæra, y de la Arte de Navegar, con nuevos instrumentos y reglos*: por M. Martin Cortes (Sevilla, 1556).

Medina and Cortes contained an account of the Ptolemaic hypothesis ; a calendar and rules to find the prime and epact, the moon's age, and time of tides ; use of the compass ; tables of the sun's declination for five years ; and descriptions of the sea chart, astrolabe, and cross staff. Contemporary with these works were the labours of Gemma the Frisian at Antwerp, who, among other improvements, invented a new cross staff in 1545, and published his *De Principiis Astronomiæ*. The great demand for instruction in all the maritime countries of Europe, led to numerous translations of the first Spanish books on navigation. Italian and French editions of Medina came out at Venice and Lyons in 1554, and a Flemish edition at Antwerp in 1580.¹ It was also translated into Dutch by Martin Everart Brug at Amsterdam in 1598,² and into English by J. Frampton in 1581. But the work of Cortes was more popular in England. At the suggestion of Stephen Burrough, the Arctic navigator and distinguished pilot, Richard Eden published an English translation of Cortes in 1561, of which there were several editions.

¹ The edition of Medina, which was published at Antwerp in 1580, has a special interest ; for a copy of it was taken up to the Arctic Regions by Barents in his third voyage, and was found by Captain Carlsen at Ice Haven in 1871, having been lying there since 1596. It is now in the Naval Museum at the Hague. It is a quarto volume, containing the Art of Navigation, by Pedro de Medina, with the new instructions of Michel Coignet.

² This new edition, by Martin Everart Brug, was published in 1598 by Cornelis Claesz at Amsterdam. It also contained the new instructions by Coignet.

When Martin Frobisher undertook his first voyage in 1576, he was of course supplied with the best instruments and works of navigation then in existence. A list of them has been preserved. He had a French book on cosmography by Andreas Thevet, a Spanish edition of Medina, a great globe in blank, a nautical sphere, a clock, an astronomical ring, and an astrolabe, a cross staff, twenty compasses of sorts, eighteen hour glasses, a great chart of navigation, the general map by Mercator, and three small printed charts.

The best English navigation book, when Davis wrote, was the *Regiment of the Sea* by William Bourne, which was designed as a supplement to the work of Cortes. Among other new matters it gives the places and declinations of thirty-two principal stars, and describes the log and line.¹ The first

¹ This is probably the earliest account of the log and line. Bourne says :—"To knowe the shippes way some doe use this, which (as I take it) is very good. They have a peece of wood, and a line to vere out over boord, which they make fast at one ende ; and at the other ende, and in the middle, they have a peece of a line which they make fast with a small thread to stand like unto a crow foote : for this purpose, that it should drive asterne as fast as the shippe doth go away from it, alwaies having ye line so ready that it goeth out so fast as the ship goeth. In like manner, they have an houre glasse of a minute, so that the line being out may be stopt just with that time that the glass is out. Which done, they hale in the logge or piece of wood, and looke how many fadom the shippe hath gone in that time. That being known, they multiply the number of fadoms by the portion of time, or part of an hour. Whereby you may know how many leagues the shippe goeth in an hour."—Bourne's *Regiment of the Sea*, Hood's edition of 1596, p. 48.

edition of Bourne appeared in 1577, and later editions were brought out, with additions by Dr. Hood. Discoveries and improvements were following each other rapidly in England in those days. Robert Norman, the hydrographer, observed for the variation of the compass, and discovered the dip of the needle in 1576. Edward Wright showed the true method of projecting a chart on the plan attributed to Mercator; and Briggs laboured to introduce the use of logarithms.¹ Many treatises on the use of globes and instruments were published, as well as on navigation; and the subject appears to be so interesting that I have endeavoured to enumerate the works relating to navigation which were written during the age of Elizabeth. This list is printed as an Appendix.

The object of Davis in the publication of his *Seaman's Secrets* was to furnish a practical guide to the sailor, and to impart the amount of scientific knowledge which is necessary for the due comprehension of the art of navigation. Other works were more elaborate, and gave as much space to the

¹ Henry Briggs, a Yorkshireman, was born in 1556, and became Professor of Geometry at Oxford in 1596. He promoted the use of logarithms explained by Napier in 1614, and went to Edinburgh to confer with Napier on the subject. In 1624 he printed *Arithmetica Logarithmica*. He also brought out the first six books of Euclid, and wrote a treatise on the North-west Passage. He was a promoter of the voyages of Sir Thomas Button and Luke Fox. He died on January 26th, 1630, at Oxford. Fox, who sailed in 1631, named a group of islands in Hudson's Bay, "Briggses his Mathematickes".

theoretical and abstract sections as to practical instruction, while the aim of Davis was to bring together a brief relation of such practices as in his several voyages he had, from experience, collected. The treatise gives an exact and comprehensive idea of the state of the scientific knowledge of navigation at the time when some of our most memorable maritime enterprises were undertaken. The information is arranged in the form of dialogues. The *Seaman's Secrets* supplanted the translations of Cortes, and was very popular, passing through eight editions between 1594 and 1657.

Davis was certainly one of the most accomplished seamen of his age. Sir Robert Dudley and Sir William Monson speak of him as a most learned mariner and a good mathematician.¹ Davis invented

¹ "Capitano Giovanni Davis Inglese era dottissimo marinero e buon matematico." (*Arcano de Mare*, lib. II, cap. v). This superb work, in three folio volumes, was first published at Florence in 1646, with the following title, *Dell' Arcano de Mare di D. Ruberto Dudleo, Duca di Nortumbria e Conte di Warwick. Libri Sei*. The first book is on longitude, the second on general charts and portolani, the third on discipline at sea and naval tactics, the fourth on naval architecture and fortification, the fifth on navigation and spiral and great circle sailing, and the sixth contains an atlas of special charts. The plates are very fine, and include elaborate figures of all the instruments then in use on board ship. The second edition of the *Arcano de Mare*, appeared at Florence in 1661, twelve years after the author's death.

Robert Dudley, the author of the *Arcano de Mare*, was a very remarkable man. He was the son of Robert Dudley, Earl of Leicester, by Lady Douglas Howard, daughter of Lord Howard of Effingham and widow of Lord Sheffield. His legitimacy was unjustly disputed, and at last he retired to Italy. Before he left England he had seen service at sea, was general of a fleet which

a new instrument called the back staff, designed to be an improvement on the old cross staff, for observing the altitude of heavenly bodies; and he was foremost in the adoption of all new inventions in the science of navigation.

Davis dedicated the *Seaman's Secrets* to Lord Howard of Effingham, the Lord High Admiral, who, six years before, had defeated the Spanish Armada. In the dedicatory letter he alludes to his three Arctic voyages, and says that the attempts to discover a passage were abandoned owing to the death of their chief patron, Sir Francis Walsingham. He then refers to his voyage in the fleet of Cavendish, which he undertook owing to his vehement desire to attempt the passage from the South Sea. He defends himself against the charge of having deserted Cavendish, briefly and with dignity. In conclusion he refers to the excellence of Englishmen in mathematics and map-making, in engraving and shipbuilding, and, above all, as navigators and seamen, in which art of seamanship, he declares, "wee are not to be matched by any nation of the earth".

went to the West Indies in 1594, and with Essex at the sack of Cadiz. He was gifted with extraordinary talent, and was skilled in various sciences. The Emperor Ferdinand II created him a Duke in 1620, and he called himself Duke of Northumberland. He died in 1649 at Florence.

Sir William Monson, in his *Naval Tracts*, when he advocates the establishment of a lecture on navigation, says: "What made John Davis so famous for navigation but his learning, which was confirmed by experience. This lecture no doubt in a little time will make men as famous as Davis, to the honor and benefit of the commonwealth."—Monson in *Churchill's Voyages*, iii, p. 402.

Hence he conceives that the knowledge of navigation is a matter of great moment, and that every man is bound "to give his best furtherance thereunto, among whom, the most unmeet of all, I have published this short treatise, naming it the *Seaman's Secrets*."

The *World's Hydrographical Description* appeared in the following year. It is conceived in the same spirit as the discourse of Sir Humphrey Gilbert,¹ a work which must have been well known to Davis, having been printed in 1576, yet the *Description* is not a plagiarism, for it contains different arguments, and information derived from greater experience.

Davis first states the arguments that have been used against a north-west passage, and then answers

¹ "A discourse written by Sir Humphrey Gilbert, Kt., to prove a passage to Cataya and the East Indies", is printed in *Hakluyt* (2d ed.), ii, pages 32 to 47. It is divided into ten chapters. The first is to prove by authority the existence of a passage, in the second is the proof from reason, and the third shows that America is an island from the reports of various travellers. The four next chapters discuss the traditions that the passage has been sailed through; and in the eighth chapter the reasons of Mr. Anthony Jenkinson for a north-east passage are contested. In the ninth chapter it is shown that the north-west passage is more commodious for traffic, and in the tenth the manifold advantages of the discovery are set forth. At the close of the discourse, Sir Humphrey exclaims: "He is not worthy to live at all who for fear or danger of death shunneth his country's service or his own honor, since death is inevitable, and the fame of virtue immortal." The glorious death of Sir Humphrey Gilbert took place only two years before Davis sailed on his first Arctic voyage.

Sir William Monson, in his *Naval Tracts*, wrote a discourse concerning the north-west passage, which is intended as a reply to Gilbert and Davis (*Churchill*, iii, p. 392).

all objections. He next, like Sir Humphrey Gilbert, appeals to the authority of many authors, ancient and modern, to show that America is an island. In this part of his discourse he refers to his own experiences, and furnishes quaint descriptions of scenery, and some new particulars having reference to his three Arctic voyages. There are also some interesting remarks on the flotation of ice, and the formation of icebergs; and Davis concludes with an enumeration of the great advantages to be derived from the discovery of the passage. His reasoning, however far-fetched it may appear to be at the present day, sufficiently proves the zealous enthusiasm which animated this energetic explorer. In some passages, towards the end of the treatise, it rises to eloquence. I cannot help expressing the wish that there were more such men now, to awaken England to a sense of the advantages to be obtained, and the honour to be gained, through Arctic enterprise.

In the *World's Hydrographical Description*, mention is made of the famous "globe which Mr. Sanderson to his very great charge hath published, for the which he deserveth great favour and commendations".¹ Davis says that it was through him that Emery Molyneux was employed to construct the globe, and that his northern discoveries were delineated upon it. There are two globes, one celestial the other terrestrial, which were the first

¹ Page 211.

ever constructed in this country,¹ and are now in the Library of the Middle Temple. Upon the terrestrial globe are the arms of Sanderson, quartering Skirne, Wall, and Langston, with a Latin inscription, and the following English rendering :

“WILLIAM SANDERSON,

“to y^e Gentle Reader.

“Not in the lappe of learned skill I euer was up brought,
Nor in the study of the Starres (with griffe I graunt) was taught,
Yet whilst on this side arts, on that syde vertues honor,
My minde admiring viewed, and rested fixt vpon her ;
Loo, at my charge thou seest y^e euer whirling sphere,
The endles reaches of the land and sea in sight appeare
For countries good, for worlds behoofe, for learnings furtherance,
Wherby our vertuos Englishmen, their actions may advāce
To visite forraigne lands where farthest coastes do lye,
I haue these worldes thus formed, and to worldes good apply.
With word, I pray you fauor them; and further them with will
That arts and vertue may be deekt, with their due honor still,
But yf that any better haue, let them the better shewe
For lernings sake, I will not spare y^e charges to bestowe.”

“Non me suscepit gremio Mathesis. . . .

“Frob., Drake, Pett, and Jackman.

“Joannes Daus Anglus annis 1585, 86, 87, littora Americæ, circium spectantia a quinquagesimo quinto gradu ad 73 subpolarem scutando perlegit.”

The celestial globe bears the date 1592. The terrestrial was finished at the same time, but the original date has been omitted. Some additions were subsequently made. It now shows, not only the

¹ The oldest existing globe was made by Martin Behaim in 1492, and is still in the possession of his family at Nuremburg. The globe of Mercator, published at Louvain, dates from 1541.

discoveries of Davis, but also those of Willem Barents, the Dutch navigator, the record of whose voyage did not reach Holland until 1598. The date 1603 was put on the globe when the discoveries of Barents were drawn upon it. The globe is two feet in diameter.

Hakluyt, in the address to the reader, in his *Principal Navigations*, published in 1589, was the first to announce the construction of these famous globes, in the following words: "A very large and most exact terrestrial globe, collected and reformed according to the newest, secretest, and latest discoveries, both Spanish, Portugall, and English, composed by M. Emerie Mollineux of Lambeth, a rare gentleman in his profession, being therein for divers yeeres greatly supported by the purse and liberalitie of the worshipfull marchant M. William Sanderson." Hakluyt adds that he has contented himself with giving, in his volume, one of the best general maps of the world (namely, one by Ortelius) to serve until the globe shall come out. This was in 1589. The globe came out in 1592.

A manual for the use of the Molyneux globes was published in 1592, by T. Hood, of Trinity College, Cambridge; and another manual by Robert Hues,¹

¹ Robert Hues (or Husius) was born near Leominster, in 1553, and entered as a servitor at Brazenose College, Oxford. When he took his degree, he was considered a good Greek scholar, and a sober and serious student. He afterwards became skilled in mathematics and geography; and in 1593 he published the *Tractatus de globis et eorum usu, accommodatus iis qui Londini editi sunt: an. 1573, sumptibus Gulielmi Sandersoni: Civ., Lond.* Hues died at Oxford on May 24th, 1632, aged 79.

appeared in 1593. It is in Latin, entitled *Tractatus de Globis et eorum usu*; and was translated into Dutch by Hondius in 1596. But the best description of the globes will be found in Blundeville's Exercises.¹ He compares the terrestrial globe of Molyneux with that of Mercator (1541), and explains all the additions and corrections that have been made on the former, including the discoveries of Frobisher and Davis, the new places in the East and West Indies, which were unknown to Mercator; and the two lines, one red and the other blue, which show the circumnavigating routes of Drake and Cavendish.

It has been supposed that Molyneux was also the constructor of the "New Map" which illustrates this volume. But it is almost certain that the map was drawn by that great mathematician Edward Wright. The delineation of the discoveries of Davis on the globe and on the map, is identical. This goes far to prove that Davis himself assisted in the preparation both of the globe and the map.

There are two notices of John Davis, in the correspondence at the State Paper Office, which relate to this period (1593 to 1596). One is in a letter from Sir Walter Raleigh to Sir Robert Cecil, dated March 3rd, 1594 (1595). In it Sir Walter mentions that Captain Davis is accused of some notorious villany by one Milburne, but that the matter has been examined by some of the best gentlemen in Devonshire,

¹ *M. Blundeville, His Exercises, containing Eight Treatises* (4th edition), 1613, p. 513. The first edition appeared in 1594.

and nothing was proved, yet Davis had been sent up to London in charge of a pursuivant. Raleigh asks favour for Davis and leave for him to depart. He adds that Milburne, who accuses him, had seduced his wife during his absence, that he is a dissolute person with nothing to lose, and like to be hanged for coining. The other is a letter from Sir Robert Young to Sir Robert Cecil, dated March 15th, 1596. Sir Robert reports that the diligence, fidelity, and intelligence of John Davis, in Allfield's matter, have been very great; that he took all Allfield's books that were in the West Country, which were very evil and seditious, and sent them to Sir R. Young; and that Davis's bonds have been taken, with surety for his appearance in twenty days after warning given at Blackaller's house in Dartmouth.

These letters refer to transactions of little importance, the clues to the full history of which are lost. They are only referred to in order to enumerate all the existing sources of information respecting the life of Davis.

During the years 1596 and 1597 there is reason for the belief that John Davis was serving under the Earl of Essex in the expedition to Cadiz and the voyage to the Azores. It appears that he took service with the Dutch in their voyage to the East Indies in 1598, at the suggestion of Essex, and that he had previously become acquainted with the Earl. We find also, from a passage in his account of the Dutch voyage, that he had certainly seen active service under Essex, and this could only have been

during 1596 or 1597. He says that he and an English comrade “undertook to order these Fellowes, *from that excellent methode which we had seene in your Lordship’s most honourable Actions*”.¹ Moreover, Sir William Monson, who was Captain of the the Earl’s ship at Cadiz, and also served in the voyage to the Azores, tells us that he often had conversations with Mr. John Davis.² It may, therefore, be considered as almost certain that Davis was serving in the expeditions commanded by the Earl of Essex during the years 1596 and 1597, probably as a Pilot.

There is a letter in the State Paper Office which proves, beyond doubt, that Captain Davis was at sea in 1596 or 1597. A Mr. Honyman, a merchant of London, who frequently supplied Sir Robert Cecil with news from Rochelle and Spain, wrote to him on March 9th, 1597, enclosing a letter from T. Baker at Plymouth, saying—“You have heard of the taking of your ship in which Captain Davis went, but your loss was not much, as they left the ship and contented themselves with the goods”. Honyman adds that the enemy’s ships had been set forth from Brittany by the Duc de Mercœur.

We next find John Davis accepting an engagement as Chief Pilot in a Dutch ship, destined to form part of a fleet intended for the East Indies, evidently at the suggestion of the Earl of Essex. At that time the spirit of maritime enterprise was very strong in Holland, more especially amongst the merchants

¹ See page 136.

² *Naval Tracts*, Churchill, iii, page 392.

of Amsterdam, to whom belongs the credit of originating and despatching the memorable expedition in which the gallant Barents laid down his life, as well as the first Dutch voyage to the East Indies, in 1595. The townsmen of Middleburg and Veere, in Zeeland, not to be behind their compatriots in Amsterdam, likewise displayed the same eagerness to embark in ventures involving risk and danger, with the prospect of commensurate profits. Thus it was that Middleburg despatched the second Dutch voyage to the East Indies.

The expedition in which Davis served was undertaken by the merchant family of the Mouchérons, an account of whom will be found in a note at page 132. The Company of the Mouchérons, formed more especially for the East India trade, consisted of several members of that family besides other merchants. In December 1597, Balthazar de Moucheron, as head of the Company, informed the States General that it was intended to send three ships and a yacht,¹ during the forthcoming year, to the East Indies, to trade in spices, and requested that they might be furnished with guns and ammunition, and be exempted from tolls, as were the ships that had been previously sent out by the Amsterdam and Rotterdam Companies.

This request was granted, instructions being given to the Admiralty at Middleburg to carry it into effect.

Balthazar, ever anxious to promote the welfare

¹ Only two sailed.

and insure the success of the enterprise, succeeded in inducing several of the seamen who had been employed in the previous voyage to join his undertaking. Among these were the two brothers de Houtman, to the eldest of whom was entrusted the command of the expedition, in spite of the ill success of his recent voyage, by which he had fallen considerably in the estimation of the merchants of Amsterdam. In order, however, to obtain the services of these men, Moucheron was obliged to offer them higher salaries than they were receiving from their former employers.

The ships for the Zeeland voyage were *De Leeuw* (the Lion) and *De Leeuwin* (the Lioness).

In the former were the following officers :—

Cornelis de Houtman,	<i>Chief.</i>
Pieter Stockman,	<i>Captain.</i>
Guyon Lefort,	<i>Treasurer.</i>
John Davis,	<i>Steersman or Pilot.</i>
Jacques Baudous,	<i>Cashier.</i>
Jan van den Aertbruggo	} <i>Assistants.</i>
Jacques Sanders	

In the *Lioness* were—

Frederik de Houtman,	<i>Captain.</i>
Thomas Coymans,	<i>Cashier.</i>
Bus	} <i>Assistants.</i>
Abbing	
Thomassen	

The only account of this voyage, which (so far as the owners and principal officers of the ships were concerned) terminated so disastrously, is the one written by Davis, and published by Purchas in his

Pilgrimes. Cornelis de Houtman was killed in the treacherous attack made on the ships by the King of Achen, and Frederik de Houtman was at the same time taken prisoner. He remained in captivity for twenty-six months, during which time he compiled a dictionary of the Malay language, and took several observations of many stars in the southern hemisphere, which, with his dictionary, were published after his return to Holland.

For the information regarding the Company of the Mouchérons, and the equipment of this expedition, I am indebted to Mr. J. K. J. de Jonge's admirable work, entitled *The Rise of the Dutch power in the East Indies*.¹

Mr. de Jonge's opinion respecting the conduct of Davis during this voyage, must have been formed from a perusal of the English seaman's own narrative, for no other account of the expedition is extant. This narrative is certainly not flattering to the Dutch, by whom Davis appears to have been very harshly treated. Mr. de Jonge says, "If Moucheron made a mistake in thinking that in Cornelis de Houtman he had secured a skilful leader, he made a greater mistake in engaging the English Pilot, John Davis; for he seems to have entered the service of Moucheron with the sole object of being a spy, commissioned as such by the Earl of Essex, as appears by his own words written three days after his return from India,

¹ *De Opkomst van het Nederlandsch Gezag in Oost. Indie, door Jhr. Mr. J. K. J. de Jonge.* Published by Martinus Nijhoff. 'sGravenhago. Frederick Muller, Amsterdam, 1864.

to Essex. "According to those directions which your Lordship gave me in charge at my departure, when it pleased you to employ me in this voyage, for the discovering of these Eastern parts of the world, to the service of Her Majesty and the good of our country."

I cannot but think that Mr. de Jonge has adopted a mistaken view of the case. Davis was employed by the Dutch as chief pilot, and as such he undoubtedly performed his duty to the best of his ability, and successfully navigated the vessels entrusted to his pilotage to their destination in the East Indies, and thence home. Not only did he do this, but he saved both ships from capture,¹ after the elder de Houtman had been killed and his brother taken prisoner. Mr. de Jonge makes no mention of the other Englishman, Master Tomkins, who was serving on board the *Lion*, and who with Davis so bravely defended the poop of the vessel when she was treacherously attacked off Achen.

As for the letter sent by Davis to the Earl of Essex on his return from this voyage, the English Pilot did no more, in furnishing a report to that nobleman, than we should expect of any loyal and patriotic man, no matter of what nation, employed on a like service. As well might it be said that the foreign officers who accompanied Sir Allen Young in his recent Arctic voyages in the *Pandora*, or Professor Nordenskiöld, in the *Vega*, were spies because they very properly forwarded reports of those voyages to their several governments!

¹ See page 144.

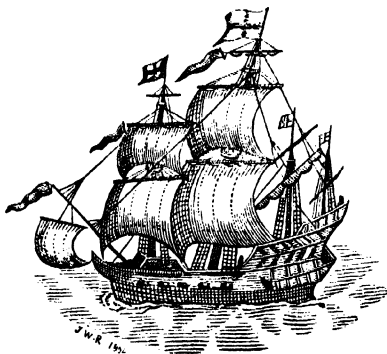
Davis, although serving under the Dutch flag, had not sworn allegiance to that nation, but had merely given his services to assist in a mercantile enterprise, and he was in no way bound to keep silence respecting the events of the voyage. It must be remembered that Davis, when employed by the Mouchérons, was a man of eminence, and one who had greatly distinguished himself as a navigator. He had already written the accounts of former voyages, and had published two learned treatises. It could not, therefore, have been supposed that he would not write some account of his voyage to the East Indies. Fortunately there is direct contemporary evidence that he was not expected by his employers to remain silent respecting the events of the voyage. William Walker, who translated the journal of the Dutch voyage under Jacob Neck in 1601, preceded it with a letter addressed to Sir Thomas Smith, the Governor of the East India Company.¹ In this letter he says that the Dutch had "special assistance in their late navigations by the meanes of Master John Davis and other skilfull Pylots of our nation; and in return the Dutch doe in ample manner requite us; acquainting us with their voyages, discoveries and dangers, both outward and homeward, with their negotiations and traffique at Java, the Maluco, and other places, and likewise with the quantitie and value of spices and other commodities which they brought home". Thus the Dutch themselves freely

¹ MS. in possession of the Hakluyt Society.

communicated information to their English allies in those early days, so that it is a total misapprehension to suppose that an English pilot, serving in a Dutch ship, could in any sense be a spy.

The narrative of the second Dutch voyage to India, by John Davis, is the more valuable because, as I have already said, it is the only one extant. He returned to Middleburg on the 29th of June 1600, and forwarded his report, with a covering letter, to the Earl of Essex, on the 1st of August.

Meanwhile the English East India Company had been formed, and preparations were being busily made for the despatch of the first venture under the command of Captain James Lancaster, who was appointed General of the Fleet on the 10th of December 1600. Davis was the only English Pilot who had made a voyage to the east, and, on his return to



The Red Dragon.

England in August 1600, his services were cagerly sought for and secured. He was appointed Pilot

Major on board the *Red Dragon*, Lancaster's ship, with the understanding that he was to have £500 if the voyage yielded two for one ; £1,000 if three for one ; £1,500 if four for one ; and £2,000 if five for one. The expedition sailed from Woolwich on the 13th of February 1601 (1600 after the English account), and returned on the 11th of September 1603. The original manuscript journals of this memorable voyage are lost ; but the narrative, as given by Purchas, has been reprinted and edited for this Society by Mr. Clements Markham.² Davis is only mentioned once, and quite incidentally. When the fleet was at Achen it is said that Captain Lancaster was not a little grieved at Captain John Davis, his principal Pilot, having told the merchants before sailing from London, that pepper was to be had at Achen much cheaper than proved to be the case.³ This identifies Lancaster's chief Pilot with the John Davis who was Pilot in the Dutch fleet ; for no one, who had not been in India before, could have spoken with authority on such a subject as the price of pepper at Achen.

Davis prepared the second edition of his *Seaman's Secrets* for the press after his return with Captain Lancaster. It was published in 1607. But he had

¹ The *Red Dragon* was formerly a ship belonging to the Earl of Cumberland, called the *Malice Scourge*. She was bought by the East India Company for £3700, and re-christened the *Red Dragon*, a ship of 600 tons, with a crew of 202 men.

² *The Voyages of Sir James Lancaster, Kt., to the East Indies*, edited by Clements R. Markham, C.B., F.R.S. (Hakluyt Society, 1877), pages 57 to 107.

³ Page 84.

not been many months on shore, before he was induced to accept service again under Sir Edward Michelborne, a gentleman pensioner of King James I. Great interest had been made to get Michelborne the command of the East India Company's first fleet, in place of Lancaster. The Lord Treasurer is said to have used much persuasion with the Company to accept of his employment, as principal commander of the voyage ; but the merchants announced that they were resolved not to employ any gentleman in any place of charge in the voyage, desiring "to sort their business with men of their own quality". In the Charter of Incorporation of the East India Company, privileges are granted to George Earl of Cumberland and 215 knights, aldermen, and merchants. In this list the name of Sir Edward Michelborne comes third ; but in July 1601 a minute records that Sir Edward, with two others, were "disfranchised out of the freedom and privileges of this fellowship, and utterly disabled from taking any benefit or profit thereby". No reason is given for this expulsion, but soon afterwards we find Michelborne preparing an expedition on his own account.

It is evident that Sir Edward Michelborne had a good deal of influence at Court. We have seen the Lord Treasurer pressing the Company to appoint him to command their first voyage. On June 25th, 1604, James I, regardless of the Charter giving exclusive rights to the East India Company, granted a license to Michelborne, one of his gentlemen pensioners, to discover and trade with Cathaia and

Japan, notwithstanding any grant or charter to the contrary. Accordingly the courtly adventurer equipped a vessel called the *Tiger*, of 240 tons, with a pinnace named the *Tiger's Whelp*; and John Davis accepted the appointment of Pilot. This was his second voyage to the East Indies in an English vessel,¹ the third counting his Dutch service.

Before he sailed on his last voyage, John Davis made his Will. It would appear that his wife was dead, and that he was engaged to be married to one Judith Havard, if he should be spared to return home once more. But this was not to be. The Will is as follows:—

“In the name of God Amen. Being nowe bounde to the seas for the coaste of China in the *Tigar* of London, and uncertaine of my returne, I doe committ my bodye to God's favourable direction and my sowle to his euerlastinge mercie, and for my worldly goods, whatsoever lands, leases, m'chandizes, or money, either in my possession or in due comynge unto me, as by specialities or otherwise shall appeare, my will is that it shall be devided and parted into fower equall parts or porc'ons; that is to say, I give and bequeath th' one foureth parte thereof to Judith Havard, unto whom I have given my faithe in matrimony, to be solemnpnized at my returne. The other foureth part I give to Gilbert Davis, my eldest sonne. The third foureth parte I give to Arthur Davis, my second sonne; and the last foureth parte to Phillip Davis, my thirde youngest sonne now living. Soe my will is, that my goods be equally divided betweene my three sonnes and Judith Havard, my

¹ As stated by Purchas on the heading of the narrative. See page 157. Sir William Monson, in his *Naval Tracts*, also says that Captain Davis was slain in his *second* voyage to the East Indies (Churchill, iii, page 369).

espoused love, and to be delivered after my death, ys manifestlie knowne. But if any of them shall dye before they receive their parte, then it shall be equally devided betwene those that live. If they all dye before it be devided, then I give th' one haulf to the poore and th' other haulf to my brother Edward Davis and to his children: and soe, commyting my soule to God, I desire that this my Wyll may be faithfully p'formed, and to testifie that this is my deede and desire, I doe hereunto sett my hande and scale this 12th of October, 1604. By me, JOHN DAVIS.¹

So the brave old navigator arranged his earthly affairs, and bade farewell to his three sons and his espoused love; whom he was never to see again. His age was about 55. The *Tiger* set sail from Cowes on the 5th of December 1604, and made a prosperous voyage to the west coast of Sumatra. The narrative as given by Purchas, was not written either by Michelborne or by Davis, for both are mentioned several times in the third person. The writer uses the first person plural, and latterly the first person singular. His name does not appear, but he was apparently the Master of the ship, Michelborne being the General, and Davis the Pilot. Davis wrote sailing directions for the Sumatran coast from Achen to Tiku and Priaman, based on experience obtained during three voyages. They are printed in the present volume for the first time,² and in justice to the great navigator, it must be borne in mind that they only exist in the form of an

¹ Extracted from the principal registry of the Probate, Divorce, and Admiralty Division of the High Court of Justice. In the Prerogative Court of Canterbury.

² Page 185.

uncorrected draft.¹ These directions are mentioned in the Journal of Ralphe Crosse during the tenth voyage of the East India Company, in 1612,² who says that the Master of the *Hoseander* shaped his course by them.

In October 1605, the *Tiger* arrived at Bantam, and thence a course was shaped for Patani, a place on the eastern side of the Malay Peninsula.

While on the voyage to Patani, the *Tiger* fell in with a vessel full of Japanese pirates. Having lost their own junk, they had seized another, and were making the best of their way to their native country. But contrary winds had driven them to leeward, which was the cause of this most ill omened encounter. They were crowded together, ninety men in a small craft of seventy tons, and there seemed little likelihood of their ever reaching Japan. Michelborne and Davis imprudently opened friendly intercourse with these ruffians, who immediately conceived the idea of massacring the English and seizing their ship. The two vessels remained at anchor for two days, under the lee of a small islet near Bintang, at the eastern entrance of the Strait of Malacca. The English "entertained them with good usage," intending in return to obtain information from them

¹ Among the Sloane MSS., 3,668, fol. 157. The paper is headed "Mr. John Daves, his observations, voyaging from Acheane to Tecoe and Priaman."

² "The Master of the *Hoseander* shaped his course for Tecoe by the directions of Captain Keelinge and Daves, ther journallos".—*Lancaster's Voyages*, p. 260 (Hakluyt Society's series).

which would be useful hereafter. Occasionally as many as five or six and twenty Japanese at a time, "upon mutuall courtesies, with gifts and feastings betweene us", were allowed to come on board the *Tiger*. On one of these occasions, when there were English and Japanese in both vessels, the pirates gave the signal to fall upon their unsuspecting hosts. In the junk the Japanese easily killed or drove overboard all the English that were on board. At the same time the Japanese on board the *Tiger* rushed out of the cabin, where they were being entertained. The first person they met was Captain Davis, who was coming out of the gun room. They pulled him back into the cabin, gave him several wounds, and then thrust him out before them. His wounds were mortal, and he died as soon as he came into the waist. There was then a desperate hand to hand fight, and even after the pirates had been driven back into the cabin, they fought for at least four hours. At last the Master of the *Tiger* had two demi-culverins loaded with bullets, case shot, and cross-bars, and fired them into the cabin, blowing the pirates to pieces. It was a very narrow escape for the whole crew, and, as it was, the death of the Pilot was an irreparable loss. Michelborne, after capturing and pillaging two Chinese vessels, gave up his enterprise and returned home, arriving at Portsmouth on July 9th, 1606.

The grant of a license for this voyage was resented by the Company, and there were several complaints of the ill consequences arising from the piratical

acts of Sir Edward Michelborne, the first of the interlopers.¹

The Will of John Davis was proved by his son Gilbert on the 10th of January 1607 (1606 old style), six months after the return of the *Tiger* with the news of his death.²

Thus ended the life of this great explorer and accomplished seaman. The date of his death was the 29th or 30th of December 1605, and his body was probably committed to the deep near the eastern entrance of the Straits of Malacca. All he has written, of which I have been able to obtain a knowledge,³ and full accounts of all the voyages in which

¹ In December 1608 John Hearne, the Company's Factor at Bantam, wrote home that "the matter of Sir E. Michelborne is not forgotten among some of the chiefs here in town. If any more such as he be permitted to do as he did in these parts, their state there would be very dangerous." He urges the Company "to use all prevention in this point." Captain Marlowe wrote to the same effect in 1612.

² "Decimo die mensis Januarij Anno Domini iuxta cursum et computacōnem Eccl'ie Anglicane millesimo sexcentesimo sexto emanavit com'issio Gilb'to Davis filio nrāli et 'ltimo dicti defuncti ad administrandu bona iura et credita dicti defuncti juxta tenorem testi hmōi eo quod idem defunctus nullum in eodem nodaverit executorem de bene et fidel'r administrando eadem Ad Sancta Dei Evangelia jurat."

I have only been able to find one incidental mention of this Gilbert Davis. Among the lists of persons admitted "free brethren of the East India Company", I find, on November 10th, 1624, the name of Simon Whettcombe, who had served his apprenticeship to Gilbert Davys, and was therefore eligible for admittance on payment of ten shillings to the poor box.

³ The writings of John Davis are :—

1.—The narrative of the second Arctic voyage.

2.—The traverse book of the third Arctic voyage.

he was engaged, except that with Lancaster, which has already been printed for the Hakluyt Society, have now been brought together; and I sincerely trust that their perusal will have the effect of taking the name of the famous discoverer, John Davis, out of the list of England's forgotten worthies.

My thanks are due to Dr. Rink, the Director of the Royal Greenland Trade at Copenhagen, for kindly examining the list of Eskimo words given by Davis; to Mr. A. H. A. Hamilton of Exeter, who supplied me with all the information regarding the connection of Davis with that city; and to Mr. Coote of the British Museum for the ready aid which he was at all times anxious to give me in my researches, for many useful suggestions, and for the memoir on the "New Map" with which he has kindly furnished me, for insertion in this volume.

I have also to offer my special thanks to my friend Commander Hull, R.N., the Superintendent of Charts at the Admiralty, for kindly revising the sheets of the *Seaman's Secrets*, and illustrating the text by several valuable notes.

3.—A letter to Sir Francis Walsingham, 1585.

4. } Two letters to Mr. Sanderson, 1586 and 1587.
5. }

6.—The Scaman's Secrets and Dedication.

7.—The World's Hydrographical Description.

8.—A letter to the Earl of Essex.

9.—His voyage to India, as Pilot in a Dutch ship.

10.—Observations in voyages from Achen to Priaman.

NOTE ON

THE PREVIOUS BIOGRAPHICAL ACCOUNTS

OF

CAPTAIN JOHN DAVIS.

BESIDES the famous Captain John Davis of Sandridge there was a contemporary Captain John Davis of Limehouse, and it will presently be seen how important it is that there should be no confusion between the two men.

The history of Captain John Davis of Limehouse is briefly as follows. He served in the fleet of Captain Lancaster during the first voyage set forth by the East India Company, from February 1601 to September 1603. It is clear that he was in this fleet, because in 1615 he states that he had been fifteen years in the company's service. Captain John Davis of Sandridge was also serving under Lancaster in the same voyage as Pilot Major. The second voyage of John Davis of Limehouse to India was in Sir Henry Middleton's fleet, from 1604 to 1606, as Pilot of the *Ascension*. His third voyage was with Captain David Middleton, as Pilot of the *Expedition*, from 1606 to 1609. He was next with Captain Marlowe, as Master of the *James*, from February 1611 to August 1615.¹ Marlowe died, and

¹ He says himself, in his *Rutter*, that he was in the *James*. Consequently he must be the "John Davyc", an abstract of whose journal of the voyage of the *James* is given by Purchas.

Davis came home as commander, but he was guilty of rioting and extreme drunkenness. His fifth voyage to India was as master in the *Swan*, under Captain Courthorp, in 1616. The *Swan* was seized by the Dutch off Banda in 1617, and Davis was detained a prisoner. His wife petitioned the Company against the Dutch, and they eventually released him, and advanced him money for his homeward voyage. He returned home in 1618, and then wrote some sailing directions, which are printed in Purchas.¹ The title is "A ruter or briefe direction for readie sailings into the East India, digested into a plaine method by Master John Davis of Limehouse, upon experience of his five voyages thither and home againe." He found some difficulty in getting re-employed, but on June 18, 1619, was appointed gunner of the *Bull*. He changed from her into the *Lesser James*. The master of this ship, named John Wood, was a regular drunkard, and Davis was addicted to the same vice. In 1621 Wood was superseded, and the death of Davis was reported from Batavia on March 6, 1622. On August 27, 1622, the wills of John Davis and all other dead men were sent home.

Thus it is clear that John Davis of Limehouse was quite a different person from the great navigator of Sandridge, and that the former, and not the latter, made five voyages to India and home again, and wrote a "Ruter for sailing into the East Indies."²

¹ *Pilgrimes*, i, pp. 444 to 451.

² The name of a third John Davis, a follower of the Earl of

The importance of tracing out the history of John Davis of Limehouse lies in the fact that writers, from Prince to Froude, have confused him with John Davis of Sandridge.

Prince, in his *Worthies of Devon*,¹ was the first to write a notice of the life of Captain John Davis of Sandridge. He says, quoting from Westcote, that he was born at Sandridge, and married Faith, daughter of Sir John Fulford. He adds that he was the first pilot who conducted the Zeelanders to the East Indies; that he made no less than five voyages to the East Indies, and returned home safe again, and that he wrote a "Ruter" for sailing into India. The accounts of the voyages, he says, "are to be seen, I suppose, in Hakluyt's work, to which I refer the curious". Prince thus concludes his notice, "When or where this eminent person died I do not find."

Here the two men are hopelessly mixed up. John Davis of Sandridge made one voyage to the East Indies with the Zeelanders, and two in English ships, and he only returned home twice, being killed on his second English voyage. The accounts of these voyages are not in Hakluyt, as Prince supposes, but in Purchas.

The next notice of John Davis of Sandridge is in the *Biographia Britannica*, by Dr. Kippis, published in 1793. Following Prince, it is here again stated

Essex, also frequently occurs in the correspondence of the time. But he was a soldier.

¹ Prince's *Worthies of Devon* (new edition), 1810, page 285.

that Davis made no less than five voyages to the East Indies as a pilot, and an account is given of the murder of Davis during the Michelborne voyage, quoted from Harris. Dr. Kippis was the first to perceive that there must have been two John Davises. He points out that either John Davis of Limehouse, who wrote the "Rutter", was not identical with John Davis of Sandridge, or else the latter was not killed in 1605, for the "Rutter" was written in 1618. But this hint was lost upon subsequent writers, who continued to follow Prince, although it was clear, on his own showing, that Prince had never himself read the voyages.

Sir John Barrow¹ uses Prince as his authority, and consequently makes all the same mistakes. He says that Davis of Sandridge wrote a "Rutter" or brief description of sailing into the East Indies; that he made several voyages in the service of the Dutch, some of which have been published, two of them in Purchas; that he made not less than five voyages to the East Indies, and returned home safe; and that posterity must remain in ignorance of the place of his death. The mistakes in Sir John Barrow's account are as follows. John Davis of Sandridge did not write a "Rutter" for sailing to the East Indies, he only made one voyage in the service of the Dutch, consequently the accounts of several have not been published, and there are not two in Purchas. He did not make five voyages to the East Indies,

¹ *A Chronological History of Voyages into the Arctic Regions* (1818), pp. 113 to 125.

and return safe home, and posterity is not in ignorance of the place of his death.

In answer to some inquiries published by Mr. John Petheram in *Notes and Queries*,¹ Mr. Bolton Corney pointed out most of these mistakes in 1853, but he is not quite accurate himself. He begins by saying, "despite Prince's assertion, I question whether Davis married a daughter of Sir John Fulford". But Prince does not make the assertion, he merely quotes from Westcote—a good authority. Mr. Corney also finds fault with Prince for saying that Davis was the first pilot who took the Dutch to the East Indies. Prince, however, does not say so. He states that Davis was the first to take the Zeelanders, which is quite correct. Mr. Corney then points out that the journal of the Dutch voyage is not in Hakluyt; that Davis of Sandridge did not make five voyages to the East Indies; that he did not return safe home; and that he did not write a Rutter. But Mr. Corney does not explain this complication of errors by pointing out the existence of another John Davis.

In 1852 Mr. Froude published an article in the

¹ 1st Series, v, p. 488. Mr. Petheram, in the *Athenæum* for January 1852, noticed the existence of a curious manuscript at the end of the copy of the "World's Hydrographical Description" in the Lenox Library at New York. It is entitled "Motives for ordering a project for the discoverie of the North Pole terrestrial, the Straights of Anian into the South Sea and coasts thereof". Mr. Petheram afterwards printed this manuscript in his *Bibliographical Miscellany*, No. 1 (Nov. 15th, 1853) and No. 3 (Jan. 20th, 1854), with a commentary.

Westminster Review, entitled "England's Forgotten Worthies". He repeated all the old mistakes about Davis, and added fresh ones. Yet Mr. Froude republished his article in 1868, in a volume entitled "Short Studies on Great Subjects". His account of John Davis is that he was a sailor boy of Sandwich; that Sandwich (meaning Sandridge) is the adjoining parish to Greenway; that Davis is known to have commanded trading vessels in the eastern seas; that he returned five times from India; that the details are lost; that he took out Sir Edward Michellthorne to India; and that he fell in with a crew of Japanese, who murdered him in a few hours.

Here the two namesakes are mixed up in sad confusion. John Davis was not a sailor boy of Sandwich, and Sandridge is not the adjoining parish to Greenway, for it is not a parish at all. Davis of Sandridge never commanded a trading or any other vessel in the Eastern seas, though Davis of Limehouse once had a temporary command, owing to the death of his captain. It was John Davis of Limehouse, not he of Sandridge, who returned from India five times. The details of none of the voyages made by either Davis are lost. Michellthorne is not the name of the general to whom John Davis of Sandridge was pilot; and, finally, the Japanese did not murder Davis in a few hours after he fell in with them. They were upwards of two days in his company.

Of which Davis can Mr. Froude be said to have written? He mixes up the events of the lives of

both, and some of his statements are wrong, as applied to either of them. Surely this is not the way to preserve England's Worthies from being forgotten!

The latest author who has written on Davis is Mr. Fox Bourne, in his work entitled *English Seamen under the Tudors* (1868). His account is brief, but accurate so far as it goes, with the exception of the statement that Davis took service with Cavendish *after* his return from a voyage to the East Indies with the Dutch.¹ But this is evidently an oversight, for Mr. Fox Bourne subsequently gives the correct date of Davis's engagement with the Dutch.²

¹ Page 137.

² Page 146.

NOTE ON THE "NEW MAP",

BY

C. H. COOTE.

"Come, here's the map."—1 *Henry IV*, Act iii, Sc. 1.

THE map which forms so suitable an illustration of the present volume, is a fac-simile, executed in a manner worthy of the Society, of the rare map or "*Hydrographicall Description*" sometimes found bound up with the *magnum opus* of Hakluyt in three vols. folio, London, 1598-1600. This last, as is well known, is a development of his earlier work of 1589 in one vol. It is a somewhat remarkable fact, in the bibliography of these two important but distinct works, that in Hallam's well known *Introduction to the Literature of Europe in the 15th, 16th, and 17th Centuries*, they are conspicuous by their absence, and that the only allusion to either, is an incidental one to the first, made in reference to what turns out to be a later impression, with additions, of the original of our map.¹ No better introduction to the "*Hydrographicall Description*" will be found than in Hallam's own words, which although written apparently with an imperfect knowledge of its real history and antecedents, are, on

¹ This has been reproduced by the autotype process, by Mr. Quaritch from the Grenville copy of Hakluyt.

the whole, not an unworthy description of it. He writes, "The best map of the sixteenth century is one of uncommon rarity, which is found in a very few copies of the first (*sic*) of *Hakluyt's Voyages*."

"This map contains Davis's Straits (Fretum Davis), Virginia by name, and the Lake Ontario. The coast of Chili is placed more correctly than in the prior maps of Ortelius ; and it is noticed in the margin that the trending of the coast, less westerly than had been supposed was discovered by Drake in 1577, and confirmed by Sarmiento and Cavendish.¹ The huge Terra Australis of the Old Geography is left out. Corea is represented near its place, and China with some degree of correctness ; even the north coast of New Holland is partially traced. The Strait of Anian, which had been presumed to divide Asia from America, has disappeared, while a marginal note states that the distance between those two continents in latitude 38° is not less than 1200 leagues. The Ultra-Indian region is inaccurate ; the Sea of Aral is still unknown, and little pains have been taken with central and northern Asia. But upon the whole it represents the utmost limit of geographical knowledge at the close of the sixteenth century, and far excels the maps in the edition of Ortelius at Antwerp in 1588."²

Further investigation respecting this map, more

¹ The cartouche containing this notice of the trending of the coast of South America is omitted in the first state of the plate. The example in the British Museum from which our facsimile is made, would appear to be unique.

² 5th edition, vol. iv, p. 355.

particularly in reference to the period at which the original was produced, serves to show that it has claims upon our attention, beyond those suggested by Hallam. In a paper read before the New Shakspeare Society at University College on June 14th, 1878, and since published,¹ it was shown that the original of our map was no other than the "new map" referred to by Shakspeare in Twelfth Night, Act iii, scene 2, a play produced for the first time in the Hall of the Middle Temple, February 1601-2. It is a source of pleasure to add that the arguments in its favour have, thus far, been accepted by competent critics as sound and conclusive.

What appears to have escaped the notice of Hallam, and those who have attempted to describe it at various times down to our day, is, that our map is laid down upon the projection commonly known as Mercator's. So little appears to be known as to the early history of this projection, that as recently as April 16th, 1878, it has been suggested by Mr. Elias F. Hall² that charts upon this projection were not in general use among seamen at a period much earlier than 1630. Still more recently it has been gravely asserted that a distinguished Admiral of the American navy only knew of it as the Merchant's projection! and that he never knew that there was such a man as Mercator.³ In 1569 was produced at Duisbourg,

¹ *Transactions* of New Shakspeare Society, 1877-9, Part I, pp. 88-100.

² *Bulletin* of the American Geographical Society, No. 4, 1878, p. 184.

³ *Ibid.*, No. 1, 1879, p. 36.

Mercator's well known *Mappemonde*, and many years elapsed before it attracted the notice of other map-makers. However interesting it may be to us as a monument of geography, it is now admitted that, as regards the projection, it is only approximately correct up to latitude 40° . For the want of a demonstration of the true principles upon which such a projection was to be laid down, beyond the legend on the *Mappemonde*, it found but few imitators. The only three known to us are, Bernardus Puteanus of Bruges in 1579, Cornelius De Jode in 1589, and Petrus Plancius in 1594. Of the first and third no examples of their maps on this projection are known to exist, these two doubtless had all the imperfections of the original Mercator. De Jode's *Speculum Orbis Terrarum* of 1589 is remarkable, as, while being on the old plane projection with the lines of latitude and longitude equidistant, there is to be seen on it a feeble attempt to divide the central meridional line according to the idea of Mercator, one of the best possible proofs how imperfectly this idea was understood by Mercator's own fellow-countrymen. About 1597 was published by Jodocus Hondius in Amsterdam, a map entitled *Typus Totius Orbis terrarum*, etc., easily to be recognised by an allegorical figure, at the bottom of it, of a Christian soldier armed for the fight against all the powers of evil. This is on the true projection, known as Mercator's, but which is really that of Edward Wright. From Hondius' connexion with Mercator, and whose joint portraits form the frontispiece of the well known

Atlas of the latter, it might with good reason be supposed, that Hondius acquired the art of projecting this map from Mercator, yet if one thing is more certain than another in the history of this projection, it is the fact that Hondius did *not* acquire this art from Mercator or his map, but from Edward Wright, the friend and colleague of Hakluyt.

In proof of this, the following evidence is adduced. We learn from Blundevile¹ that, at some previous period, probably as early as 1592, Wright sent to his friend, the author, "a table to drawe thereby the parallells in the Mariner's Carde, together with the vse thereof in trewer sort, with a draught" or diagram of the projection. These, it is evident, were extracts from Wright's *Errors in Navigation*, then in MS. Wright, in his preface to the reader, in his work when printed, bitterly complains that he was induced to lend this MS. to Hondius, who, with its aid and without Wright's consent, prepared and published several "mappes of the World, which maps had been vnatched, had not he (Hondius) learned the right way to lay the ground-work of some of them out of this book."² That the above *Typus* is one of the printed maps complained of, seems to be proved by the allusion to Wright to be found on it.

The strongest evidence against the theory of Hondius having acquired this art from Mercator, is the fact that in none of the subsequent editions of Mercator's *Atlases* edited by him is there a map on

¹ *Exercises*, 1594, p. 326.

² *Errors*, 1599, Preface, p. x.

this projection to be found. The truth is, that to Wright, and not to Mercator, is due the honour of being the first to demonstrate the true principles upon which such maps were to be laid down by means of the now well known *Tables of meridional parts*.

The first legitimate attempt to lay down a map upon the really true projection, is no other than the original of our map. Before proceeding to point out some of its remaining points of interest, it will be convenient here to endeavour to remove one or two misapprehensions respecting it, which are even now entertained by more than one of our eminent book-sellers.

Mr. Quaritch, without adducing the least amount of evidence, asserts that "Hakluyt intended to insert this map in his work of 1589".¹ This is impossible, as from internal evidence it could not possibly have been produced at an earlier period than 1598 or 99, as has been before pointed out.² Upon this point we fear that Mr. Quaritch has allowed himself to be misled by the pardonable blunder of Hallam. Again, he says, that Hakluyt calls the original of our great map, a terrestrial *Globe*. This is also a mistake. When Hakluyt said a globe, he meant one, and not a map; such a globe as he describes was forthcoming in 1592, at a period midway between the first edition of the *Voyages* and the appearance of our map. The only example of this globe

¹ *Bib. Geog. Ling.*, Part 3, No. 12081.

² Note to *Transactions* New Shakspeare Society, p. 94.

at present known to exist, is preserved in the library of the Middle Temple.³

Hitherto one of the difficulties in describing and establishing the identity of this map has been its anonymous authorship. Mr. Quaritch, in an otherwise fair appreciation of the writer's labours in this direction, has thought fit, in another part of his catalogue,¹ to charge the writer with appropriating Mr. Quaritch's labours in this matter of authorship. The charge has no foundation in any fact whatsoever. The writer's conclusions about it were based solely upon a comparison made between our map and a globe, two things which Mr. Quaritch has confounded. The globe referred to is known to be by Molyneux, the reference to it on the title of the map led the writer to the not unnatural inference that they were by one and the same author. This position the writer strengthened by two quotations from a scarce tract by the late Dr. J. G. Kohl² of Bremen, which was published twenty years before Mr. Quaritch's catalogue of 1877 saw the light. The conclusion arrived at by the writer, without any assistance from Mr. Quaritch, was that our map, *circa* 1600, was a new one, on a new projection, made by one of the most eminent globe makers of his time, probably under the superintendence of Hakluyt. The evidence upon this point is of course strongly circumstantial only, which future research may either refute or confirm. Be this as it

¹ See article "Globe", *Ency. Brit.*, 9th edition, vol. 10.

² No. 11919.

³ *Maps relating to America in Hakluyt*, 1857, p. 7.

may, one thing is now quite certain, namely, that our map, to a very great extent, bears evidence upon the face of it of the handiwork of another of Hakluyt's friends and colleagues, hitherto unsuspected, we take it, even by Mr. Quaritch. Allusion has already been made to Wright's *Errors in Navigation*, the first edition of which was published in 1599. In 1610 appeared the second edition, in which mention is made of a general map, which map it has not been our good fortune to see, as the copy in our national library is without it. Several editions were subsequently published by Moxon. In these are to be seen copies of a map laid down upon lines almost identical with ours. They have geographical additions up to date, and also indicate the variations of the compass. These later maps are avowedly ascribed to Wright, and a comparison of any one of them with our map most certainly points to one common source, namely, the original. The conclusion is therefore irresistible, that whatever may be due to Molyneux or Hakluyt in the execution of the original, it also represents the first map upon the true projection by Edward Wright. It will be observed as a somewhat happy coincidence that Hallam's almost first words of introduction to our map are a reference to the Arctic work of Davis, 1585-7. On the map is also to be observed a record of the discovery by the Dutchman Barents, of northern Novaya Zemlya, in his third voyage in 1596.¹ This is the latest

¹ Observe, "Het behouden huys", the house of safety where the Barents relics were found.

geographical discovery recorded upon it, which serves not only to determine the date of the map, but to establish for it the undoubted claim of being the earliest one engraved in England, whercon this last important Arctic discovery is to be found. The striking similarity between our map and Molyneux's globe, in the delineations of these Arctic discoveries of Davis and Barents, seems to point to the conclusion that, so far as the geography is concerned, they both came from one source, namely, the hands of Molyneux.

Arctic discovery did not escape the notice of our immortal Shakspeare. In some fifty lines preceding his supposed reference to our map in *Twelfth Night* occur the following words: "You are now sailed into the north of my lady's opinion, where you will hang like an icicle on a Dutchman's beard."¹ The antithetical idea being of course the equatorial region of the lady's opinion. If the date assigned to it is correct, it is probable in the extreme that the thought underlying these words was suggested to the mind of Shakspeare by a glance at the upper portion of our map, evidently well known in his time as a separate publication. The remaining points that call for notice are as follows. The improved geography of the whole of the eastern portion of our map, as compared with its contemporaries, and the traces of the first appearance of the Dutch under Davis and Houtman at Bantam. On all the old maps was to be seen the huge Terra Australis of the old geography.

¹ Act iii, scene 2.

This, as Hallam remarked, had been left out on our map; but what is so remarkable is that upon it is to be observed, rising "like a little cloud out of the sea, like a man's hand", the then unknown continent of Australia. It will be observed that Hallam describes the original as "the best map of the sixteenth century". Mr. Quaritch improves upon this, and says it is "by far the finest cartographical labour which appeared, from the epoch of the discovery of America down to the time of d'Anville"¹! If this implies a reference to our map as a work of art, *i.e.*, an engraving, we beg to differ from him, as such terms are misleading. As a specimen of map engraving, it will *not* compare with even its pirated prototype by Hondius. The art of engraving by Englishmen, more particularly that of maps, was at this period, as is well known, in its infancy. Maps and illustrations for books were for the most part executed abroad, and those who did work here were almost all foreigners. The two best known were Augustus Ryther, who executed among other things the maps for Saxton's *Atlas*, and Hondius, who did those for Speed's *Atlas*. Mr. Richard Fisher writes:² "We have scarcely any record of any Englishman practising engraving in this country prior to the commencement of the seventeenth century." The names, however, of two are afforded us by Davis himself in his Introduction to the *Seaman's Secrets*, namely, those of Molyneux

¹ *Bib. Geog. Ling.*, 12081.

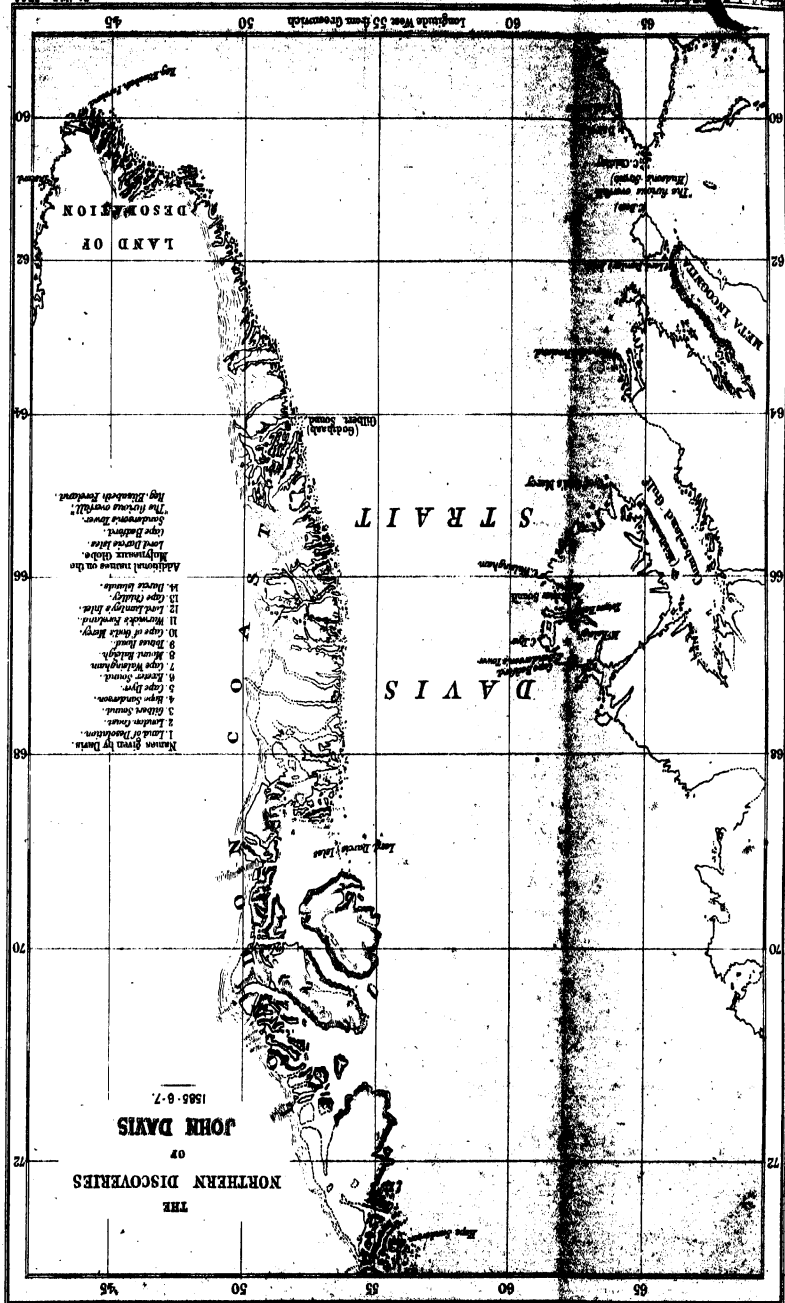
² *Catalogue of Engravings*, p. 309.

and Hillyer.³ It is to be hoped that the position of our map in the history of cartography is secured upon firmer grounds than those suggested by the best intentions of Mr. Quaritch. It was the writer's belief in this that first led him to express the hope that the original of the facsimile, so admirably done for the Society, would henceforth be as firmly associated with Shakspeare's *Twelfth Night* as it certainly is now, not only with the pages of Hakluyt, but with the publications of the Society that bears his name.

C. H. COOTE.

³ Nicholas Hilliard. See note at p. 233. To these may be added Rogers, Switser, and Cure. See *Palladis Tamia*, Wit's Treasury. By Francis Meres, London, 1578, 8vo, p. 287.





The first voyage¹ of Master John Davis, undertaken
in June 1585, for the Discoverie of the Northwest
Passage.

Written by John Janes, Marchant, servant to the worshipfull
M. William Sanderson.

CERTAINE Honourable personages and worthy Gentlemen of the Court and Countrey, with divers worshipfull Marchants of London and of the West Countrey, mooved with desire to advance God's glory and to seeke the good of their native Countrey, consulting together of the likelihood of the Discoverie of the Northwest passage, which heretofore had bene attempted, but unhappily given over by accidents unlooked for, which turned the enterprisers from their principall purpose, resolved after good deliberation, to put downe their adventures to provide for necessarie shipping, and a fit man to be chiefe Conductour of this so hard an enterprise.

The setting foorth of this action was committed by the adventurers, especially to the care of M. William Sanderson, Marchant of London, who was so forward therein, that besides his travaile which was not small, hee became the greatest adventurer with his purse, and commended unto the rest of the company one M. John Davis, a man very well grounded in the principles of the arte of Navigation, for Captaine and chiefe Pilot of this exployt.

Thus, therefore, all things being put in a readines, we departed from Dartmouth the seventh of June, towards the discoverie of the aforesayd Northwest passage, with two

¹ The Three Voyages of John Davis to the Northwest are taken from Hakluyt's *Principall Navigations, etc.*, published in 1589.

1st VOYAGE.

Barks, the one being of 50 tunnes, named the *Sunneshine* of London, and the other being 35 tunnes, named the *Mooneshine* of Dartmouth. In the *Sunneshine* we had 23 persons, whose names are these following, M. John Davis, Captaine; William Eston, Master; Richard Pope, Master's mate; John Jane, Marchant; Henry Davie, gunner; William Crosse, boatswayne; John Bagge; Walter Arthur; Luke Adams; Robert Coxworthie; John Ellis; John Kelly; Edward Helman; William Dicke; Andrew Maddocke; Thomas Hill; Robert Wats, carpenter; William Russel; Christopher Gorney, boy; James Cole, Francis Ridley, John Russel, Robert Cornish, musicians.

The *Mooneshine* had 19 persons, William Bruton, Captaine; John Ellis, Master; the rest Mariners.

The 7 of June the Captaine and the Master drewe out a proportion for the continuance of our victuals.

The 8 day, the winde being at Southwest and West south-west, wee put in for Falmouth, where we remained untill the 13.

The 13 the winde blew at North, and being fayre weather we departed.

The 14 with contrarie winde we were forced to put into Sylley.¹

The 15 we departed thence, having the winde North and by East, moderate and fayre weather.

The 16 we were drivon backe againe, and were constrained to arrive at newe Grymsbie at Sylley: here the winde remained contrarie 12 dayes, and in that space the Captaine, the Master and I went about all the Ilands, and the Captaine did platte out and describe the situation of all the Ilands, rockes and harboroughs to the exact use of Navigation, with lynes and scale thereunto convenient.

They depart
from Syllie.

The 28, in God's name, we departed, the winde being Easterly, but calme.

¹ The Scilly Islands.

The 29 very foggie.

The 30 foggie.

The first of July we sawe great store of Porposes. The July. Master called for an harping yron,¹ and shot twice or thrise: sometimes he missed, and at last shot one and strooke him in the side, and wound him into the shippe; when we had him abordo, the Master sayd it was a darlie head.

The 2 we had some of the fish sodden, and it did eate as sweete as any mutton.

The 3 we had more in sight, and the Master went to shoote at them, but they were so great, that they burst our yrons, and we lost both fish, yrons, pastime and all: yet neverthesse, the Master shot at them with a pike, and had welnigh gotten one, but he was so strong that he burst off the barres of the pike and went away: then hee tooke the boat hooke, and hit one with that, but all would not prevaile, so at length we let them alone.

The sixt we sawe a very great Whale, and every day after we sawe Whales continually.

The 16, 17, 18, we sawe great store of Whales.

The 19 of July we fell into a great whirling and brustling of a tyde, setting to the Northwards; and sayling about halfe a league wee came into a very calme Sea, which bent to the South southwest. Hero we heard a mighty great roaring of the Sea, as if it had bene the breach of some shoare, the ayre being so foggie and full of thicke mist, that wee could not see the one ship from the other, being a very small distance asunder: so the Captaine and the Master being in distrust howe the tyde might set them, caused the *Mooneshine* to hoise out her boate and to sound, but they could not finde ground in 300 fathoms and better. Then the Captaine, Master and I went towards the breach to see what it should be, giving charge to our gunners that

¹ A harpoon.

1st VOYAGE.

The rouling
of the yce
together
made a
great roar-
ing.

Yce turned
into water.

at every glasse¹ they should shoote off a musket shot, to the intent we might keepe ourselves from loosing them. Then comming nere to the breach, we met many llands of yce floating, which had quickly compassed us about: then we went upon some of them, and did perceiue that all the roaring which we heard, was caused onely by the rouling of this yce together: Our company seeing us not to returne according to our appointment, left off shooting muskets, and began to shoote falkonets,² for they feared some mishap had befallen us, but before night we came aborde againe with our boat laden with yce, which made very good fresh water. Then we bent our course towardo the North, hoping by that meanes to double the land.

The land of
Desolation.

The 20 as we sayled along the coast the fogge brake up, and wee discovered the land, which was the most deformed rocky and mountainous land that ever we sawe. The first sight whereof did shewe us as if it had bene in forme of a sugar loafe, standing to our sight above the cloudes, for that it did shewe over the fogge like a white liste in the skye, the tops altogether covered with snowe, and the shoare beset with yce a league off into the Sea, making such yrksome noyse as that it seemed to be the true patterne of desolation, and after the same our Captaine named it, The land of Desolation.³

The 21 the windo came Northerly and overblewe, so that we were constrained to bend our course South againe, for we perceived that we were runne into a very deepe Bay, where wee were almost compassed with yce, for we sawe very much toward the North northeast, West and Southwest: and this day and this night we cleared our selves of the yce, running South southwest along the shoare.

¹ The time was kept, as until very recently in the Royal Navy, by half-hour sand-glasses.

² A falkonet was a small cannon, throwing a ball of 1½ lbs. weight.

³ This land in all probability was near Cape Discord, on the eastern coast of Greenland.

Upon Thursday, being the 22 of this moneth, about three ^{1st VOYAGE.} of the clocke in the morning, wee hoysed out our boate, and the Captaine with five saylers went towards the shoare, thinking to find a landing place, for the night before we did perceive the coast to be voide of yce to our judgement, and the same night we were all persuaded that wee had scene a canoa rowing along the shoare, but afterwards we fell in some doubt of it, but we had no great reason so to doe. The Captaine rowing towards the shoare, willed the Master to beare in with the land after him, and before he came neere the shore by the space of a league, or about two miles, hee found so much yce, that he could not get to land by any meanes. Here our mariners put to their lines to see if they could get any fish, because there were so many seales upon the coast, and the birds did beate upon the water, but all was in vaine: The water about this coast was very blacke and ^{Very blacke water.} thicke, like to a filthy standing poole, we sounded and had ground in 120 fathoms. While the Captaine was rowing to the shoare, our men sawe woods upon the rocks, like to the rocks of Newfoundland, but I could not discern them, yet it might be so very well: for we had wood floting upon the coast every day, and the *Mooneshine* tooke up a tree at Sea not farre from the coast, being sixtie foote of length and fourteene handfuls about, having the roote upon it: After the Captaine came aborde the weather being very calme and fayre, we bent our course toward the South, with intent to double the land. ^{Floting wood.}

The 23 we coasted the land which did lye East northeast and West southwest.

The 24 the winde being very faire at East, we coasted the land which did lie East and West, not being able to come neere the shoare by reason of the great quantitie of yce. At this place, because the weather was somewhat colde by ^{Colde by reason of yce.} reason of the yce, and the better to encourage our men, their allowance was increased: The Captaine and the Master tooke

1st VOYAGE. order that every messe being five persons, should have halfe a pound of bread and a kan of beere every morning to breakfast. The weather was not very colde, but the ayre was moderate like to our April weather in England : when the winde came from the land or the yce it was somewhat colde, but when it came off the sea it was very hotte.

They saye
Northwest-
ward
above foure
dayes.

The 25 of this moneth wee departed from sight of this land, at five of the clocke in the morning, directing our course to the Northwestwarde, hoping in God's mercy to finde our desired passage, and so continued above foure dayes.

Land in 64
degrees 15
mi.

The 29 of July we discovered land in 64 degrees 15 mi. of latitude, bearing North east from us.¹ The winde being contrary to goo to the Northwestwards, we bare in with this land to take some vewe of it, being utterly voyde of the pester of yce, and very temperate. Comming neere the coast, we found many fayre sounds and good roads for shipping, and many great inlets into the land, whereby wee judged this land to be a great number of Islands standing together. Here having mored our barke in good order, we went on shoare upon a small Islande, to seeke for water and wood. Upon this Island we did perceive that there had bene people, for we found a small shoe and pieces of leather sowed with sinewes, and a piece of furre, and wooll like to Bever. Then we went upon another Island on the other side of our ships : and the Captaine, the Master, and I, being got up to the top of an high rocke, the people of the country having espied us, made a lamentable noyso, as we thought, with great outcryes and skreechings : wee hearing them, thought it had bene the howling of wolves. At last I hallowed againe, and they likewise cryed. Then we perceiving where they stood, some on the shoare, and one rowing in a Canoa about a smal Iland fast by them, we made

The sonnde
where our
ships did
ride, was
called
Gilbert's
Sound.

¹ Davis must, at this time, have been at the entrance of the fiord, on which is now situated the Danish settlement of Godthaab.

a great noyse, partly to allure them to us, and partly to 1st VOYAGE.
 warne our company of them. Whereupon M. Bruton, and
 the master of his ship, with others of their company, made
 great haste towards us, and brought our Musicians with Musicians.
 them from our shippe, purposing either by force to rescue
 us, if neede should so require, or with curtesie to allure the
 people. When they came unto us, we caused our Musicians
 to play, our selves dauncing, and making many signes of
 friendship. At length there came 10 Canoas from the other
 Ilands, and two of them came so neere the shoare where we
 were, that they talked with us, the other being in their
 boats a pretie way off. Their pronounciation was very hollow
 through the throate, and their speach such as we could not
 understand: onely we allured them by friendly imbracings
 and signes of curtesie. At length one of them poynting up
 to the sunne with his hande, would presently strike his
 brest so hard, that we might here the blowe. This he did
 many times, before he would any way trust us. Then John
 Ellis the master of the *Mooneshine*, was appointed to use
 his best policie to gaine their friendship: who strooke his
 breast and poynted to the sunne after their order: which
 when he had diverse times done, they began to trust him,
 and one of them came on shoare, to whome we threwe our
 caps, stockings and gloves, and such other things as then
 we had about us, playing with our musicke, and making
 signes of joy, and dancing. So the night comming we bade
 them fareweell, and went aboard our barks.

The people
 of the coun-
 try came
 and con-
 ferre with
 our men.

The next morning being the 30 of July, there came 37
 Canoas rowing by our shippes, calling to us to come on
 shoare: Wee not making any great haste unto them, one of
 them went up to the top of the rocke, and lept and daunced
 as they had done the day before, shewing us a seales skinne,
 and another thing made like a timbrel, which he did beate
 upon with a sticke, making a noyse like a small drummo. Their
 musick.
 Whereupon we manned our boats and came to them, they

1st VOYAGE. all staying in their Canoas : wee came to the waterside where they were : and after we had sworne by the sunne after their fashion, they did trust us. So I shooke hands with one of them, and hee kissed my hand, and we were very familer with them. We were in so great credit with them upon this single acquaintance, that wee could have any thing they had. We bought five Canoas of them : we bought their clothes from their backs, which were all made of scales skins and birdes skinnes : their buskins, their hose, their gloves, all being commonly sowed and well dressed : so that we were fully persuaded that they have divers artificers among them. Wee had a paire of buskins of them full of fine wooll like bever. Their apparell for heate, was made of birds skinnes with their feathers on them. We sawe among them leather dressed like glovers leather, and thicke thongs like white leather of a good length. Wee had of their darts and oares, and found in them that they would by no meanes displease us, but would give us whatsoever we asked of them, and would be satisfied with whatsoever we gave them : They tooke great care one of an other : for when we had bought their boates, then two other woulde come and carie him away betweeno them that had sould us his. They are a very tractable people, voyde of craft or double dealing, and easie to be brought to any civilitie or good order : but wee judge them to bee Idolaters and to worship the Sunne.

Great familiarity with the Savages.

During the time of our abode among these Islands, we found reasonable quantitie of wood, both firre, spruce, and juniper ; which, whither it came floting any great distance to these places where we found it, or whither it grew in some great Islands neere the same place by us not yet discovered, we know not. But wee judge that it groweth there further into the lande then wee were, because the people had great store of darts and oares, which they made none accompt of, but gave them to us for small trifles, as poynts and pieces

Divers sorts of wood.

of paper. Wee sawe about this coaste marveilous great
 aboundance of seales skulling together like skuls of smal
 fish. Wee found no fresh water among these Islands, but
 only snow water, whereof we found greate pooles. The
 cliffes were al of such oare as M. Frobisher brought from
 meta Incognita. We had diverse showes of studie or Mus-
 covie glasse¹ shining not altogether unlike to Christal. Wee
 founde an herbe growing upon the rocks, whose fruite was
 sweete, full of red joyce, and the ripo ones were like corinths.²
 We found also birch and willow growing like shrubs low to
 the ground : These people have great store of furs as we
 judge. They made shewes unto us ye 30 of this present,
 which was the second time of our being with them, after
 they perceived we would have skins, and furs, that they
 would goe into the country and come againe the next day,
 with such things as they had : but this night the wind com-
 ming faire the Captaine and the master would by no meanes
 detract the purpose of our discovery. And so the last of
 this moneth about 4 of the clocke in the morning, in God's
 name wee set sayle, and were al that day becalmed upon
 the coaste.

1st VOYAGEThey may
make much
trayne, if
they had
meanes
how to use
it.Muscovie
glasse.² A fruit like
Corinthes.

The 1 of August we had a faire wind and so proceeded to-
 wards the northwest for our discoverie.

The 6 of August we discovered land in 66 de. 40 mi. of August.
 latitude altogether voyd from ye pester of yce : we ankered
 in a very faire rode, under a very brave mount, the cliffes
 whereof were as orient as gold. This mount was named
 mount Raleigh : the rode where our ships lay at anker was
 called Totnes Rode. The sounde which did compasse the

Land in 66
degre. 40
mi.

¹ Muscovy glass is a familiar term for *Mica* ; large plates of this mineral are used in Eastern Russia as a substitute for glass.

² Currants ; probably the *Empetrum nigrum* ; a plant found in the Arctic parts of America and Europe, and regarded as an antiscorbutic. It is said the Greenlanders prepare a fermented liquor from its berries.

1ST VOYAGE. mount was named Exeter sound : the foreland towards the North, was called Dyers¹ Cape : the foreland towards the south was named Cape Walsingham.² So soone as we were come to an anker in Totnes Rode under mount Raleigh, we espied 4 white beares at the foote of the mount. We supposing them to bee goates or wolves, manned our boats, and went towards them : but when wee came neere the shore, wee found them to be white beares of a monstrous bignesse : we being desirous of fresh victual and the sport, began to assault them, and I being on land one of them came down the hil right against me ; my piece was charged with haile-shot and a bullet, I discharged my piece and shot him in the necke : hee roared a litle and tooke the water straight, making smal account of his hurt. Then we followed him in our boate, and killed him with boare speares, and two more that night. We found nothing in their mawes, but we judged by their dung, that they fed upon grasse, because it appeared in al respects like the dung of an horse, wherein we might very plainly see the very strawes.

The 7 we went on shoare to another beare which lay alnight upon the top of an Island under mount Raleigh, and when we came up to him he lay fast a sleepe. I leveled at his head, and the stone of my peece gave no fire, with that he looked up and laid down his head againe : then I shot, being charged with 2 bullets, and strooke him in the head : he being but amazed fel backwardes, wherupon we ran al upon him with borespeares and thrust him in the bodie ; yet for all that he grypt away our borespeares and went towards the water, and as he was going downe he came backe againe. Then our master shot his borespeare and strooke him in the head, and made him to take the water, and swymme into a

¹ Probably named after Sir Edward Dyer, who was Chancellor of the Order of the Garter from 1596 until his death in 1608, and who was a great favourite of Queen Elizabeth ; or else after Sir James, who was Chief Justice of Common Pleas, and died in 1582.

² Called after Sir Francis Walsingham.

cove fast by, where we killed him and brought him aboard. ^{1ST VOYAGE.}
 The breadth of his forefoote from one side to the other, was 14 ynches over. They were very fat, so as we were constrained to cast the fat away. We saw a raven upon mount Raleigh. We found withies also growing lowe like shrubs, and flowers like primroses,¹ in the sayd place. The coast is very mountaynous, altogether without wood, grasse or earth, and is only huge mountaines of stone, but the bravest stone that ever we sawe. The ayre was very moderate in this country.

The 8 we departed from mount Raleigh, coasting along the shoare, which lyeth south southwest, and north northeast.

The 9 our men fel in dislike of their allowance, because it was to small as they thought. Whereupon we made a newe proportion : every messe, being five to a messe, should have 4 pound of bread a day : 12 wine quarts of bere : 6 neweland fishes ;² and the flesh dayes a gill of pease moré : so we restrayned them from their butter and cheese.

The eleventh we came to the most southerly cape of this lande, which we named the Cape of God's mercy :³ as being the place of our first entrance for the discovery. The weather being very foggie we coasted this Northland : at length, when it brake up, we perceived that we were shotte into a very fayre entrance or passage, being in some places 20 leagues broad, and in some 30, altogether voyde of any pester of yce, the weather very tollerable, and the water of the very coulour, nature, and qualitie of the mayne ocean, which gave us the greater hope of our passage. Having sayled Northwest sixtio leagues in this entrance wee discovered certaine Islandes standing in the middest thereof, having open passage on both sides.⁴ Whereupon our shippes

¹ *Papaver Alpinum*, or *Ranunculus Glacialis*.

² Newfoundland cod ?

³ The north point of the entrance to Cumberland Gulf.

⁴ Middleaktuk Islands, in Cumberland Gulf.

1st VOYAGE. devided themselves, the one sayling on the North side, the other on the south side, of the sayde Isles, where wee stayed five dayes, having the winde at Southeast very foggie and foule weather.

The 14 we went on shoare and found signes of people, for we found stones layde up together like a wall, and saw the skull of a man or a woman.

The 15 we heard dogs houle on the shoare, which we thought had bene Wolves, and therefore we went on shoare to kil them. When we came on lande, the dogs came presently to our boate very gently, yet we thought they came to pray upon us, and therefore we shot at them and killed two: and about the nocke of one of them we found a letheren collar, whereupon we thought them to be tame dogs. There were twentie dogs like mastives with prickt eares and long bush tayles; we found a bone in the pizels of their dogs. Then wee went farther and founde two sleads made like ours in Englande. The one was made of firre, spruse and oken boards, sawen like inch boards; the other was made all of whale bone, and there hung on the toppes of the sleds three heads of beasts, which they had killed. We saw here, larkes, ravens, and partridges.

Timber
sawen.

Fowle.

The 17 we went on shoare, and in a litle thing made like an oven with stones, I found many smal trifles, as a small canoa made of wood, a pieco of wood made like an image, a bird made of bone, beads having small holes in one end of them to hang about their necks, and other small things. The coast was very barbarous, without wood or grasse. The rockes were very faire, like marble full of vaynes of diverse coulors. We found a scale which was killed not long before, being fleane and hid under stones.

An image.

Probabili-
ties for the
passage.

Our Captaine and master searched still for probabilities of the passage, and first found, that this place was all Islands, with great sounds passing betweene them.

We never
came into
any bay be-

Secondly, the water remained of one colour with the mayne ocean without altering.

Thirdly, we saw to the west of those Isles, three or foure Whales in a skul, which they judged to come from a westerly sea, because to the Eastward we saw not any whale.

1ST VOYAGE.
fore, or
after, but
the waters
colour was
altered very
blackish.

Also as we were rowing into a very great sound lying southwest,¹ from whence these whales came, upon the sodayne there came a violent counter checke of a tide from the southwest against the flood which we came with, not knowing from whence it was maintayned.

Fiftly, in sayling 20 leagues within the mouth of this entrance we had sounding in 90 fathoms, faire gray osie sand, and the further we ran into the westwards, the deeper was the water, so that hard aboard the shoare among those yles we could not have ground in 330 fathoms.

Lastly it did obbe and flowe 6 or 7 fathome up and downe, the flood comming from diverse parts, so as we could not perceiue the chiefe maintenance thereof.

The 18 and 19 our Captaine and Master determined what was best to doe, both for the safegarde of their credites and satisfying of the adventurers, and resolved, if the weather brake up, to make further search.

The 20 the winde came directly against us, so they altered their purpose, and reasoned both for proceeding and returning.

The 21, the wind being Northwest, we departed from these Islands, and as wee coasted the south shore we sawe many fayre sounds, wheroby we were persuaded that it was no firme land but Islands.

The 23 of this moneth the wind came southeast very stormy and foule weather. So we were constrayned to seeke harborowe upon the south coast of this entrance, where wee fell into a very fayre sound, and ankered in 25 fathoms greene osy sand. Here we went on shoare, where we had manifest signes of people, where they had made their fire, and laide stones like a wall. In this place we sawe 4 very

¹ Irvine Inlet?

1st VOYAGE. faire faulcons, and M. Bruton tooke from one of them his
 Faulcons. pray, which we judged by the wings and legs to be a snyte,¹
 for the head was eaten off.

The 24, in the afternoone, the wind comming somewhat
 Their re- faire wee departed from this roade, purposing by God's
 turne. grace to returne for England.

The 26 we departed from sight of the Northlande of this
 entraunce, directing our course homewards, until the tenth
 of the next moneth.

September. The 10 of September we fell with The land of Desolation,
 thinking to goe on shoare, but we could get never a good
 harborough. That night we put to sea againe thinking to
 searh it the next day : but this night arose a very great
 storme, and separated our ships so that we lost the sight of
 the *Mooneshine*.

The 13 about noone (having tryed al the night before
 with a goose wing)² we set saile, and within two houres after
 we had sight of the *Mooneshine* againe : this day we de-
 parted from this land.

They saile
 from the
 land of
 Desolation
 to England,
 in 14 dayes.

The 27 of this moneth wee fell with sight of Englande.
 This night wee had a marveilous storme and lost the *Moone-
 shine*.

The 30 of September wee came into Dartmouth, where
 wee found the *Mooneshine* being come in not two houres
 before.

¹ An old English term for a woodcock or snipe, so called from the
 peculiar length of the bill or *snout*.

"The heron leaves watching at the river's brim,
 And brings the *snyte* and plover in with him."

DRAYTON, *Noah's Flood*.

² A sail is said to be "goose winged" when its clues, or lower corners,
 are set, the centre part of the sail being either furled or tied up.

The second voyage attempted by Master John Davis
with others, for the discoverie of the Northwest Passage,
in Anno 1586.

THE seventh day of May, I departed from the porte of Dartmouth for the discovery of the Northwest passage, with a ship of an hundred and twentie tunnes named the *Mermaid*, a barke of 60 tunnes named the *Sunnesshine*, a barke of 35 tunnes, named the *Moonelight*,¹ and a Pynaco of ten tunnes named the *Northstarre*.

And the 15 of June I discovered land² in the latitude of 60 degrees, and in longitude from the meridian of London westward 47 degrees, mightily pestered with yce and snow, so that there was no hope of landing: the yce lay in some places 10 leagues, in some 20, and in some 50 leagues off the shore, so that we were constrayned to beare into 57 degrees to double the same, and to recover a free sea, which, through God's favourable mercy, we at length obtayned. The nine and twentieth of June, after many tempestuous stormes, wee againe discovered lande, in longitude from the Meridian of London, 58 degrees 30 minutes, and in latitude 64, being East from us:³ into which course, sith it

¹ This must be a misprint for the *Mooneshine*, one of the two ships in Davis's first expedition.

² In all probability Cape Farewell, although there is a difference of 3 deg. of longitude, according to its position here given, and as at present determined. Considering the instruments in use at that time, this would be a very small error.

³ This position would place the ship in the very centre of Davis Strait, and at such a distance from the land, that it would be quite impossible to discern it. Presuming the latitude to be correct, Davis must, at this time, have been near Godthaab Fiord, on the West coast of Greenland, which he had discovered during his preceding voyage and named Gilbert Sound. (See Note page 6.)

2ND VOYAGE pleased God, by contrary windes, to force us, I thought it very necessary to beare in with it, and there to set up our Pynnace, provided in the *Mermayde* to be our scout for this discoverie; and so much the rather, because the yeere before I had bene in the same place, and founde it very convenient for such a purpose, well stored with flote woode, and possessed by a people of tractable conversation: so that the nine and twentieth of this moneth wee arrived within the Isles which lay before this lande, lying North Northwest, and South Southeast, wee knowe not howe farre. This lande is very high and mountainous, having before it, on the West side, a mightie companie of Isles full of fayre soundes and harboroughs. This land was very little troubled with snowe, and the sea altogether voyd of yce.

The shippes being within the soundes, we sent our boates to searche for shole water, where wee might anker, which in this place is very harde to finde: and as the boate went sounding and searching, the people of the country having espyed them, came in their Canoas towards them with many shoutes and cryes: but after they had espied in the boate, some of our companie that were the yeere before heere with us, they presently rowed to the boate, and tooke holdo in the oare, and hung about the boate with such comfortable joy as woulde require a long discourse to be uttered: they came with the boates to our shippes, making signes that they knewe all those that the yere before had bene with them. After I perceived their joy, and smal feare of us, my selfe with the merchaunts, and others of the company went a shoare, bearing with me twentie knives: I had no sooner landed, but they lept out of their Canoas, and came running to mee and the rest, and imbraced us with many signes of hartiewelcome: at this present there were eightene of them, and to each of them I gave a knife: they offered skinnies to mee for rewarde, but I made signes that it was

not solde, but given them of curtesie: and so dismissed ^{2ND VOYA} them for that time, with signes that they shoulde retorne againe after certaine houres.

The next day, with all possible speede, the Pynace was landed upon an Isle there to bee finished, to serve our purpose for the discoverie, which Isle was so convenient for that purpose, as that we were very well able to defend our selves against many enemies. During the time that the Pynace was there setting up, the people came continually unto us, sometime an hundred Canoas at a time, sometime fourtie, fiftie, more and lesse, as occasion served. They brought with them seale skinnnes, staggo skinnnes, white hares, seale fishe, samon peale, smal codde, dry caplin, with other fish, and byrdes, such as the country did yeelde.

My selfe, still desirous to have a farther search of this place, sent one of the shipboates to one part of the land, and my selfe went to another parte, to searche for the habitation of this people, with straight commaundement that there should be no injurie offered to any of the people, neither any gunne shot.

The boates that went from me found the tents of the people made with seale skinnnes, set up upon timber, wherin they founde great store of dried Caplin, being a litle fish no bigger then a pilchard: they found bags of trayne oyle, many little images cut in wood, seale skinnnes in tan tubs, with many other such trifles, whereof they diminished nothing.

They also found, tenne miles within the snowy mountaines, a plaine champion countrey, with earth and grasse, such as our moory and waste grounds of England are: they went up into a river (which in the narrowest place is two leagues ^{A goodly river.} broad) about ten leagues, finding it still to continue they knew not how far: but I, with my company, tooke another river, which although at the first it offered a large inlet,

2ND VOYAGE yet it proved but a deepe bay, the end whereof in foure houres I attayned, and there leaving the boat well manned, went with the rest of my company thre or foure miles into the country, but found nothing, nor saw anything, save onely gripes,¹ ravens, and small birds, as larke and linnet.

The third of July I manned my boat, and went, with fifty canoas attending upon me, up into another sound, where the people by signes willed me to goe, hoping to finde theyr habitation: at length they made signes that I should go into a warme place to sleepe, at which place I went on shore, and ascended the toppo of an high hill to see into the country, but perceiving my labor vaine, I returned againe to my boat, the people still following me and my company, very diligent to attend us, and to helpe us up the rocks, and likewise downe: at length I was desirous to have our men leape with them, which was done, but our men did overleape them: from leaping they went to wrestling; we found them strong and nimble, and to have skill in wrestling, for they cast some of our men that were good wrestlers.

The fourth of July we lanchd our pinnesse, and had forty of the people to helpe us, which they did very willingly: at this time our men againe wrestled with them, and found them as before, strong and skilfull. This fourth of July the Maister of the *Mermaid* went to certaine Islands to store himselfe with wood, where he found a grave with divers buried in it, onely covered with scale skinnnes, having a crosse laid over them. The people are of good stature, well in body proportioned, with small slender hands and feet, with broad visages, and small eyes, wide mouthes, the most part unbearded, great lips, and close toothed. Their custome is as often as they go from us, still at their returne

A grave with a crosse layd over.

The Tartars and people of Japom are also small eyed.

¹ The Ger Falcon. The name *Gripe* was an old English term applied to the eagle, or vulture, from the Greek word Γρυπας, signifying a crooked nose or beak.

to make a now truce, in this sort, holding his hand up to ^{2ND VOYAGE} the Sunne, with a lowd voice cryeth *Ylyautle*, and striketh his brest, with like signes being promised safetic, he giveth credit. These people are much given to bleed, and therefore stoppe theyr noses with deere hayre, or the hayre of an elan. They are idolaters, and have images great store, which they were about them, and in theyr boats, which we suppose they worship. They are witches, and have many kindes of inchantments, which they often used, but to small purpose, thanks be to God.

Being among them at shoro the fourth of July, one of them making a long oration, beganne to kindle a fire in this maner: he tooke a peece of a boord, wherin was a hole halfe thorow: into that hole he puts the end of a rouñ sticke like unto a bedstaffe, wetting the end therof in traine, and in fashion of a turner, with a peece of lether, by his violent motion doth very speedily produce fire: which done, with turfs he made a fire, into which, with many words and strange gestures, he put divers things, which we supposed to be a sacrifice: my selfe and divers of my company standing by, they were desirous to have me go into the smoke, I willed them likewise to stand in the smoke, in which they by no meanes would do. I then tooke one of them, and thrust him into the smoke, and willed one of my company to tread out the fire, and to spurne it into the sea, which was done to shew them that we did contemne theyr sorcery.

Theyr
maner of
kindling
fire like to
theirs in
America.

These people are very simple in all theyr conversation but marvellous theevish, especially for iron, which they have in great accout. They began through our lenity to shew theyr vile nature: they began to cut our cables: they cut away the *Moonlights* boat from her sterne, they cut our cloth where it lay to ayre, though we did carefully looke unto it, they stole our oares, a caliver, a boare speare, a sword, with divers other things, wherat the company and

Great
theeves.

2ND VOYAGE

maisters being grieved, for our better security, desired me to dissolve this new friendship, and to leave the company of these theevish miscreants: wherupon there was a caliver¹ shot among them, and immediatly upon the same a faulcon,² which strange noice did sore amaze them, so that with speed they departed: notwithstanding theyr simplicity is such, that within ten houres after they came againe to us to intreat peace: which being promised, we againe fell into a great league. They brought us seale skinnnes, and sammon peale, but seeing iron, they could in no wise forbear steal- ing: which when I perceived it did but minister unto me an occasion of laughter, to see theyr simplicity, and willed that in no case they should be any more hardly used, but that our owne company should be the more vigilant to keepe theyr thinges, supposing it to be very hard in so short time to make them know theyr evils. They eat all theyr meat raw, they live most upon fish, they drinke salt water, and eat grasse and ice with delight: they are never out of the water, but live in the nature of fishes, but onely when dead sleepe taketh them, and then under a warme rocke, laying his boat upon the land, he lyeth downe to sleepe.

Their rude
diet.

Theyr
weapons.

Theyr weapons are all darts, but some of them have bowe and arrowes and slings.

Strange
nets.

They make nets to take their fish, of the finne of a whale: they do all theyr things very artificially: and it should seeme that these simple theevish Islanders have warre with those of the maine, for many of them are sore wounded, which wounds they received upon the maine land, as by signes they gave us to understand. We had among them copper oare, blacke copper, and red copper: they pronouce theyr language very hollow, and deepe in the throat: these words following we learned from them.

Copper
oare.

• ¹ A caliver was a small hand-gun or arquebuss.

Kesinyoh,¹ Eat some.
 Madlycoyte, Muske.
 Aginyoh,² Go fetch.
 Yliaoute, I meane no harm.
 Ponameg,³ A boat.
 Paaotyck,⁴ An oare.
 Asanoek,⁵ A dart.
 Sawygmeg,⁶ A knife.
 Uderah, A nose.
 Aoh, Iron.
 Blete, An eye.
 Unnicke, Give it.
 Tuckloak,⁷ A stagge or ellan.
 Panygmah, A needle.
 Aob, The sea.
 Mysacoah,⁸ Wash it.
 Lethicksaneg, A scale skinne.
 Canyglow,⁹ Kisse me.
 Ugnera,¹⁰ My sonne.
 Acu, Shot.

Conah, Leape.
 Maatuke,¹¹ Fish.
 Sambah,¹² Below.
 Macconmeg,¹³ Will you have this.
 Cocah,¹⁴ Go to him.
 Aba,¹⁵ Fallen downe.
 Icune,¹⁶ Come hither.
 Awenny, Yonder.
 Nugo,¹⁷ No.
 Tucktodo, A fogge.
 Lechiksah, A skinne.
 Maccuah,¹⁸ A dart.
 Sugnacoon, A coat.
 Gounah, Come downe.
 Sasobneg, A bracelet.
 Ugnake, A tongue.
 Ataneg,¹⁹ A scale.
 Macuah, A beard.
 Pignagogh, A threed.
 Quoy sah,²⁰ Give it to me.

NOTE.—Dr. Rink, the Director of Royal Greenland Trade at Copenhagen, and formerly Royal Inspector of South Greenland, has very kindly examined these Eskimo terms, and compared them with those now in use amongst the Greenlanders, with the following result.

- ¹ Nerisinait, Only cat.
- ² Aiguk, or ainiaruk, Fetch it.
- ³ Umianik, (by) Boat.
- ⁴ Pautik, or pautit, A kayak paddle.
- ⁵ Agssangnik, By hand.
- ⁶ Savingmik, (with) Iron; or a knife.
- ⁷ Tugto, A reindeer.
- ⁸ Misuguk, Dip it.
- ⁹ Kuninga, Kiss me.

- ¹⁰ Ernera, My son.
- ¹¹ Matak, Whale skin.
- ¹² Sama, Below, or seaward.
- ¹³ Makuniuga, Some of these.
- ¹⁴ Kakâ, Go on.
- ¹⁵ Atâ, Below it.
- ¹⁶ Ikunga, Thither.
- ¹⁷ Nagga, No.
- ¹⁸ Mákua, These.
- ¹⁹ Âtânik, (by) Saddleback seals.
- ²⁰ Káissuk, Give it.

It will be seen that many of these words have a great similarity, both in sound and sense, to those of the present day. The collection of them reflects great credit on the accuracy and perspicacity of Davis; for the difficulty of obtaining and writing down the words and phrases of an unknown tongue is very great, more especially after such a short intercourse with the natives as Davis had, both parties being totally ignorant of each other's language.

2ND VOYAGE

The seventh of July, being very desirous to search the habitation of this countrey, I went my selfe with our new pinnesse into the body of the land, thinking it to be a firme continent, and passing up a very large river, a great flaw of winde tooke me, whereby we were constrained to seeke succor for that night, which being had, I landed with the most part of my company, and went to the toppe of a high mountaine, hoping from thence to see into the countrey : but the mountaines were so many and so mighty as that my purpose prevailed not : whereupon I again returned to my pinnesse, and willing divers of my company to gather muscles for my supper, whereof in this place there was great store, my selfe having espyed a very strange sight, especially to me that never before saw the like, which was a mighty whirlwinde taking up the water in very great quantity furiously mounting it into the ayre, which whirlwinde was not for a puffe or blast, but continuall, for the space of three houres, with very little intermission, which sith it was in the course that I should passe, we were constrained that night to take up our lodging under the rocks.

Muscles.

A strange
whirle-
winde.Great Is-
lands.

The next morning the storme being broken up, we went forward in our attempt, and sailed into a mighty great river directly into the body of the land, and in briefe, found it to be no firme land, but huge, waste, and desert Isles with mighty sounds, and inlets passing betweene sea and sea. Whereupon we returned towards our shippes, and landing to stoppe a flood,¹ we found the buriall of these miscreants, we found of theyr fish in bagges, plaices, and caplin dryed, of which we tooke onely one bagge, and departed. The ninth of this moneth we came to our shippes, where we found the people desirous in theyr fashion, of friendshippe and barter : our mariners complained heavily against the people, and said that my lenity and friendly using of them gave them stom-

¹ The flood tide being against them, they landed until slack water or the ebb tide should make.

acke to mischief: for they have stollen an anker from us, ^{2ND VOYAGE}
they have cut our cable very dangerously, they have cut our
boats from our sterne, and now since your departure, with
slings they spare us not with stones of halfe a pound weight : *Slings.*
and will you still indure these injuries : it is a shame to
beare them. I desired them to be content, and said I
doubted not but all should be well. The tenth of this moneth
I went to the shore, the people following me in theyr canoas :
I tolled them on shore, and used them with much curtesie,
and then departed aboard, they following me, and my com-
pany. I gave some of them bracelets, and caused seven or
eight of them to come aboard, which they did willingly, and
some of them went into the toppo of our shippe : and thus
curteously using them, I let them depart : the Sunno was no
sooner downe, but they began to practise theyr devilish
nature, and with slings throw stones very fiercely into the
Moonelight, and strake one of her men, the boatswaine that
he overthrew withall : wherat being moved, I changed my
curtesie, and grew to hatred, my selfe in my owne boat well
manned, with shot, and the barks boat likewise pursued
them, and gave them divers shot, but to small purpose, by
reason of theyr swift rowing : so small content we returned

The 11 of this moneth there came five of them to make a
new truce : the maister of the Admiral came to me to shew
me of theyr comming, and desired to have them taken, and
kept as prisoners untill we had his anker againe : but when
he saw that the chiefe ringleader, and maister of mischief,
was one of the five, he then was vehement to execute his
purpose, so it was determined to take him : he came, crying,
Iliaout, and striking his brest, offered a payre of gloves to
sell ; the maister offered him a knife for them : so two of them
came to us, the one was not touched, but the other was
soone captive among us : then we pointed to him and his
fellowes for our anker, which being had, we mado signes
that he should be set at liberty : within one houre that he

2ND VOYAGE

One of the
people
taken,
which after
died.

came aboard, the winde came fayre, whereupon we weyed, and set saile, and so brought the fellow with us: one of his fellowes still following our ship close aboard, talked with him, and made a kinde of lamentation, we still using him well, with *Yliaout*, which was the common course of curtesie. At length this fellow aboard us spake foure or five words unto the other, and claped his two hands upon his face, whercupon the other doing the like, departed, as we suppose, with heavy chere. We judged the covering of his face with his hands, and bowing of his body downe, signified his death. At length he became a pleasant companion among us. I gave him a new sute of frizo after the English fashion, because I saw he could not indure the colde, of which he was very joyfull; he trimmed up his darts, and all his fishing tooles, and would make okam, and set his hand to a ropes end upon occasion. He lived with the dry caplin that I tooke when I was searching in the pinnesse, and did eat dry Newland fish.

All this while, God be thanked, our people were in very good health, onely one young man excepted, who dyed at sea the foureteenth of this moneth; and the fifteenth, according to the order of the sea, with praise given to God by service, was cast overboard.

The 17 of this moneth, being in the latitude of 63 degrees 8 minuts, we fel upon a most mighty and strango quantity of ico, in one intyre masse, so bigge as that we knew not the limits thereof, and being withall so very high, in forme of a land, with bayes and capes, and like high cliffe land, as that we supposed it to be land, and therefore sent our pinnesse off to discover it: but at her returne we were certainly informed that it was onely ice, which bred great admiration to us all, considering the huge quantity thereof, incredible to be reported in truth as it was, and therefore I omit to speake any further therof. This onely,

I thinke that the like before was never scene, and in this ^{2ND VOYAGE} place we had very stickle and strong currants.

We coasted this mighty masse of ice untill the 30 of July, finding it a mighty barre to our purpose: the ayre in this time was so contagious, and the sea so pestered with ice, as that all hope was banished of proceeding: for the 24 of July all our shrowds, ropes, and sailes were so frozen, and compassed with ice, onely by a grosse fogge, as seemed ^{The nature of fogges.} to me more then strange, sith the last yecre I found this sea free and navigable, without impediments.

Our men through this extremity began to grow sicke and feeble, and withal hopelesso of good successe: wherupon very orderly with good discretion, they intreated me to regard the state of this businesse, and withall advised me, that in conscience I ought to regard the safety of mine owne life, with the preservation of theyrs, and that I should not through my over boldnesse leave their widowes and fatherlesse children to give me bitter cursses. This matter, in conscience, did greatly move me to regard theyr estates: yet, considering the excellency of the businesse, if it might be attained, the great hope of certainty by the last yeres discovery, and that there was yet a third way not put in practise, I thought it would grow to my great disgrace, if this action by my negligence should grow into discredit: wherupon, seeking helpe from God, the fountaine of all mercies, it pleased his divine Majesty to moove my heart to proscute that which I hope shal be to his glory, and to the contentation of every Christian minde. Wherupon, falling into consideration, that the *Mermaid*, albeit a very strong and sufficient ship, yet by reason of her burden, not so convenient and nimble as a smaller barke, especially in such desperate hazzards: further having in account her great charge to the adventurers, being at 100 li. the moneth: and that in doubtfull service, all the premises considered, with divers other things, I determined to furnish the *Moone*-

2ND VOYAGE *light* with revictualling and sufficient men, and to proceed in this action as God should direct me: wherupon, I altered our course from the ice, and bare East southeast to recover the next shore, where this thing might be performed: so with favorable winde it pleased God that the first of August we discovered the land in latitude 66 deg. 33 min., and in August 1. longitude from the meridian of London 70 deg., void of trouble, without snow or ice.¹

The second of August, we harboured our selves in a very excellent good road, where, with all speed, we graved the *Moonlight*, and revictualled her: we searched this country with our pinnesse while the barke was trimming, which William Eston did: he found all this land to be only islands with a sea on the East, a sea on the West, and a sea on the Great heat. North. In this place we found it very hot, and we were very much troubled with a flie which is called Musketa, for they did sting grievously. The people of this place, at our first comming in caught a scale, and with bladders fast tied to him, sent him unto us with the flood,² so as he came right with our shippes, which we tooke as a friendly present from them.

The fift of August I went with the two maisters and others to the toppe of a hill, and by the way William Eston espied three Canoas lying under a rocke, and went unto them: there were in them skinnes, darts, with divers superstitious toyes, whereof we diminished nothing, but left upon every boat a silke point, a bullet of lead, and a pinne. The next day being the sixt of August, the people came unto us without feare, and did barter with us for skinnes, as the other people did: they differ not from the other, neither in theyr canoas nor apparell, yet is theyr pronuntiation more plaine then the others, and nothing hollow in the throat.

¹ The land here discovered must have been in the immediate vicinity of Old Sukkertoppen.

² The flood tide.

Our miscerant aboard us kept himselfe close, and made ^{2ND VOYAGE} shew that he would faine have another companion. Thus, being provided, I departed from this land the twelfth of August, at sixe of the clocke in the morning, where I left the *Mermaid* at an anker: the foureteenth, sailing West about fiftie leagues, we discovered land, being in latitude 66 degrees 19 minuts:¹ this land is 70 leagues from the other, from whence we came. This foureteenth day, from nine a clocke at night till threo a clocke in the morning, we ankered by an Island of ice, twelve leagues off the shore, being mored to the ice.

The fifteenth day, at threo a clocke in the morning, we departed from this land to the South, and the eighteenth of August we discovered land Northwest from us in the morning, being a very fayre promontory, in latitude 65 degrees, having no land on the South.² Heere we had great hope of ^{Great hope of a passage.} a through passage.

This day, at threo a clocke in the afternoone, we againe discovered land Southwest and by South from us, where at night we were becalmed.³ The nineteenth of this moneth, at noone, by observation, we were in 64 degrees 20 minuts. From the eighteenth day, at noone, unto the nineteenth at noone, by precise ordinary care, we had sailed 15 leagues South and by West, yet by art and more exact observation, we found our course to be Southwest, so that we plainly perceivd a great currant striking to the West.

^{A great currant to the West.}

This land is nothing in sight but Isles, which increaseth our hope. This nineteenth of August, at sixe a clocke in the afternoone, it began to snow, and so continued all night, with foule weather, and much winde, so that we were con-

¹ Probably Cape Walsingham, or the land south of that Cape.

² The Cape of God's Mercy.

³ The *Mermaid* on this day would have been at the entrance to Cumberland Gulf, which had been explored by Davis during his voyage the preceding year.

2ND VOYAGE strained to lie at hull¹ all night five leagues off the shore :

Islands.

Hope of a
passage.

In the morning, being the twentieth of August, the fogge and storme breaking up, we bare in with the land, and at nine a clocke in the morning we ankered in a very fayre and safe road and locket for all weathers. At tenne of the clocke I went on shore, to the toppe of a very high hill, where I perceived that this land was Islands:² at foure of the clocke in the afternoone we weyed anker, having a fayre North northeast winde, with very fayre weather: at six of the clocke we were cleere without the land, and so shaped our course to the South to discover the coast, wherby the passage may be, through Gods mercy, found.

We coasted this land till the eight and twentieth of August, finding it still to continue towards the South, from the latitude of 67 to 57 degrees: we found marvellous great store of birds, guls and mewes, incredible to be reported; wherupon, being-calme weather, we lay one glassso³ upon the lee, to prove for fish, in which space we caught 100 of cod, although we were but badly provided for fishing, not being our purpose.

This eight and twentieth, having great distrust of the weather, we arrived in a very fayre harbor in the latitude of 56 degrees,⁴ and sailed ten leagues into the same, being

¹ To "lie at hull", is a nautical expression synonymous with "lying-to". A very small amount of canvas only is set, and the helm is lashed "hard-a-lee".

"To hull" also signifies a ship, or boat, driving to and fro without rudder, sail, or oar.

"He look'd, and saw the Ark *hull* on the flood,
Which now abated, for the clouds were fled,
Driven by a keen north winde."

Paradise Lost, Book XI.

² Davis appears here to have been, without knowing it, near the entrance to Hudson Strait, and was probably on Resolution Island.

³ See note I, page 4.

⁴ I am unable to reconcile this harbour with any now existing on our charts in the same latitude.

two leagues broad, with very fayre woods on both sides: in ^{2ND VOYAGE} this place we continued untill the first of September, in ^{Faire woods.} which time we had two very great stormes. I landed, and went six miles by ghesse into the country, and found that the woods were firre, pine, apple, alder, yew, withy, and birch: heere we saw a blacke beare: this place yeeldeth great store of birds, as fezant, partridge, Barbary hennies or the like, wilde geese, ducks, blacke birds, jeyes, thrushes, with other kindes of small birds. Of the partridge and fezant, we killed great store with bowe and arrowes: in this place, at the harborough mouth, we found great store of cod. ^{Store of cod.}

The first of September, at tenne a clocke, we set saile, and coasted the shore with very faire weather. The third day being calme, at noone we strooke saile, and let fall a cadge anker,¹ to prove whether we could take any fish, being in latitude 54 degrees 30 minuts, in which place we found great abundance of cod, so that the hooke was no sooner overboord, but presently a fish was taken. It was the largest and best refet fish that ever I saw, and divers fisher men that were with me sayd that they never saw a more suaule or better skull of fish in theyr lives: yet had they seene great abundance.

The fourth of September, at five a clocke in the afternoone, we ankered in a very good road among great store of Isles, the countrey low land, pleasant, and very full of fayre woods. To the North of this place eight leagues, we had a perfect hope of the passage, finding a mighty great ^{A perfect hope of the passage.} sea passing betweene two lands West.² The South land, to our judgement, being nothing but Isles, we greatly desired to go into this sea, but the winde was directly against us.

¹ The kedge is a small anchor, frequently used when it is undesirable to let go a heavier or a larger one. *

² Either Hamilton Inlet on the coast of Labrador, or the Strait of Belle Isle, separating Newfoundland from the main land.

2ND VOYAGE We ankered in foure fathome fine sand. In this place is foule and fish, mighty store.

Two of our
men slaine
by the
Savages.

The sixt of September, having a fayre North northwest winde, having trimmed our barke, we purposed to depart, and sent five of our sailers, yoong men, a shore to an Island, to fetch certaine fish which we purposed to weather,¹ and therefore left it all night covered upon the Isle: the brutish people of this countrey lay secretly lurking in the wood, and upon the sudden assaulted our men: which, when we perceived, we presently lot slippe our cables upon the halse,² and under our foresaile, bare into the shoare, and with all expedition discharged a double musket upon them twice, at the noyce wherof they fled; notwithstanding, to our very great grieve, two of our men were slaine with theyr arrowes, and two grievously wounded, of whom, at this present, we stand in very great doubt; onely one escaped by swimming, with an arrowe shot thorow his arme. Theso wicked miscreants never offered parly or speech, but presently executed theyr cursed fury.

This present evening it pleased God further to increase our sorrowes with a mighty tempestuous storme, the winde being North northeast, which lasted unto the tenth of this moneth very extreme. We unrigged our shippe, and purposed to cut downe our masts, the cable of our shut anker³ brake, so that we onely expected to be driven on shoare among these Canibals for theyr pray. Yet, in this deepe distresse, the mighty mercy of God, when hope was past, gave us succor, and sent us a fayre lee, so as we recovered our anker againe, and now mored our shippe: where we saw that God manifestly delivered us: for the straines⁴ of one of our cables were broken, we only road by

¹ To season or preserve.

² From the hawse, or hawse-pipe.

³ Sheet anchor.

⁴ The strands. Three or more strands laid up, or twisted together, form a cable.

an olde junko.¹ Thus, being freshly mored, a new storme ^{2ND VOYAGE} arose, the winde being West northwest, very forcible, which lasted unto the tenth day at night.

The eleventh day, with a fayre West northwest winde, we departed, with trust in Gods mercy, shaping our course for England, and arrived in the West countrey in the beginning of October.

¹ Worn out, or condemned, rope, is called "junk".

2ND VOYAGE MAISTER DAVIS *being arrived, wrote his letter to M. WILLIAM SANDERSON of London, concerning his voyage, as followeth.*

Sir,—The *Sunneshine* came into Dartmouth the fourth of this moneth: she hath beene at Island,¹ and from thence to Groenland, and so to Estotiland,² from thence to Desolation, and to our merchants, where she made trade with the people, staying in the countrey twenty dayes. They have brought home five hundred scale skinnnes, and an hundred and forty halfe skinnnes, and pieces of skinnnes. I stand in great doubt of the pinnesse. God be mercifull unto the poore men, and preserve them, if it be his blessed will.

I have now full experience of much of the Northwest part of the world, and have brought the passage to that certainty, as that I am sure it must be in one of foure places, or els not at all. And further, I can assure you upon the perill of my life, that this voyage may be performed without further charge, nay, with certaine profit to the adventurers, if I may have but your favour in the action. Surely, it shall cost me all my hope of welfare, and my portion of Sandridge, but I will, by Gods mercy, see an end of these businesses. I hope I shall finde favour with you to see your card.³ I pray God it be so true as the card shall be which I will bring to you: and I hope in God, that your skill in navigation shall be gainefull unto you, although, at the first, it hath not proved so. And thus, with my most humble commendations, I commit you to God, desiring no longer to live then I shall be yours most faithfully to command. Exon this 14 of October, 1586.

Yours, with my heart, body, and life, to command,

JOHN DAVIS.

¹ Iceland.

² Newfoundland.

³ Davis must here be alluding to a new chart, projected under the superintendence of Mr. Sanderson.

The relation of the course which the *Sunshine*, a barke of fiftie tunnes, and the *Northstarre* a small pinnesse, being two vessels of the fleet of M. John Davis, held after he had sent them from him, to discover the passage betwene Groenland and Island.

Written by Henry Morgan, servant to M. William Sanderson of London.

The seventh day of May 1586, we departed out of Dart-^{2ND VOYAGE}mouth haven, foure sailes, to wit, the *Mermaid*, the *Sun-*^{May.}*shine*, the *Mooneshine*, and the *Northstarre*. In the *Sunshine* were sixteene men, whose names were these: Richard Pope, maister;¹ Marke Carter, maisters mate; Henry Morgan, purser; George Draward, John Mandio, Hugh Broken, Philip Jane, Hugh Hempson, Richard Borden, John Filpo, Andrew Madocke,² William Wolcome, Robert Wagge (carpenter), John Bruskome, William Ashe, Simon Ellis.

Our course was West northwest, the seventh and eight dayes: and the ninth day in the morning we were on head of the Tarrose of Syllie. Thus coasting along the South part of Ireland the 11 day, we were on head of the Dorses:³ and our course was South southwest untill six of the clocke the 12 day. The 13 day our course was Northwest. We remained in the company of the *Mermaid* and the *Mooneshine*, untill we came to the latitude of 60 degrees: and there it seemed best to our Generall, M. Davis, to divide ^{M. Davis divideth his fleet into 2 parts.} his fleet, himselfe sailing to the Northwest and to direct the *Sunshine*, wherein I was, and the pinnesse called the *North-*

¹ Richard Pope served as master's mate on board the *Sunshine* in Davis's first voyage to the North-west.

² Andrew Madocke also served as a seaman in the *Sunshine* in 1585.

³ Dursey Island, on the S.W. coast of Ireland, is 3½ miles in length and 815 feet high; it terminates the rugged promontory separating Bantry Bay from the Kenmare River. Off this island are situated the bold and precipitous rocks named the Bull, Cow, and Calf.

2ND VOYAGE *star*, to seeke a passage Northward betweene Groenland and Island,¹ to the latitude of 80 degrees, if land did not let us. So the seventh day of June we departed from them: and the ninth of the same we came to a firme land of ice, which we coasted along the ninth, the tenth, and the eleventh dayes of June: and the eleventh day, at six of the clocke at night, we saw land, which was very high, which afterward we knew to be Island: and the twelft day we harbored there, and found many people: the land lyeth East and by North in 66 degrees.

Island
descried.

Theyr com-
modities.

Theyr
dwellings.

Their
boats.

Theyr commodities were greene fish, and Island lings, and stockfish, and a fish which is called catfish: of all which they had great store. They had also kine, sheepe, and horses, and hay for theyr cattell and for theyr horses. We saw also of theyr dogges. Theyr dwelling houses were made on both sides with stones, and wood laid crosse over them, which was covered over with turfs of earth, and they are flat on the toppes, and many of these stood hard by the shoare. Theyr boats were made with wood, and iron all along the keele like our English boats: and they had nailes for to naile them withall, and fish hooks, and other things for to ketch fish, as we have heere in England.

They had also brasen kettles, and girdles and purses made of leather, and knoppes on them of copper, and hatchets, and other small tooles, as necessarie as we have. They dry theyr fish in the Sun, and when they are dry, they packe them up in the toppe of their houses. If we would go thither to fishing more then we do, we should make it a very good voyage: for we got an hundreth greene fish in one morning. We found heere two English men with a shippe, which came out of England about Easter day of this present yeere 1586, and one of them came aboard of us, and brought us two lambs. The English mans name was M. John Royden of Ipswich, merchant: he

M. John
Royden of
Ipswich.

¹ Iceland.

was bound for London with his shippe. And this is the ^{2ND VOYAGE} summe of that which I observed in Island.

We departed from Island the sixteenth day of June in the morning, and our course was Northwest, and saw on the coast two small barkes going to an harborough: we went not to them, but saw them a farre off. Thus we continued our course unto the end of this moneth.

They departed from Island Northwest.

The third day of July we were in betweene two firme July. lands of ise, and passed in betweene them all that day untill it was night: and then the maister turned backe againe, and so away we went towards Groenland. And the seventh day of July we did see Groenland, and it was very high, and it looked very blew: we could not come to harborough into the land because we were hindered by a firme land, as it were, of ice, which was along the shoares side: but we were within three leagues of the land, coasting the same divers dayes together. The seventeenth day of July we saw the place which our captaine, M. John Davis, the yeere before had named The land of Desolation,¹ where we could not go on shoare for ice. The eighteenth day we were likewise troubled with ice, and went in amongst it at three of the clocke in the morning. After we had cleered our selves thereof, we ranged all along the coast of Desolation untill the end of the aforesayd moneth.

Groenland discovered.

The land of Desolation.

The third day of August we came in sight of Gilberts August. sound, in the latitude of 64 deg. 15 min., which was the place where we were appointed to meete our generall and the rest of our Fleete. Here we came to an harborow at 6 of the clocke at night.

The 4 day, in the morning, the master went on shore with 10 of his men, and they brought us foure of the people, rowing in their boates, aboard of the ship. And in the afternoone I went on shore with six of our men, and there

¹ The land in the neighbourhood of Cape Discord, on the East Coast of Greenland.

2ND VOYAGE

came to us seven of them when we were on land. We found on shore three dead people, and two of them had their staves lying by them, and their old skins wrapped about them, and the other had nothing lying by, wherefore we thought it was a woman. Wee also sawe their houses neere the Sea side, which were made with pieces of wood on both sides, and crossed over with poles and then covered over with earth: we found Foxes running upon the hills: as for the place, it is broken land all the way that we went, and full of broken Islands.

The 21 of August, the master sent the boate on shore for wood, with sixe of his men, and there were one and thirtie of the people of the countrey which went on shore to them, and they went about to kill them, as we thought, for they shot their darts towards them, and we that were aboard the ship, did see them goe on shore to our men: whereupon the master sent the pinnace after them, and when they saw the pinnace coming towards them, they turned backe, and the master of the pinnace did shoote off a caliver¹ to them the same time, but hurt none of them, for his meaning was onely to put them in feare. Divers times they did weave us on shore to play with them at the foot-ball, and some of our company went on shore to play with them, and our men did cast them downe as soone as they did come to strike the ball. And thus much of that which we did see and do in that harborow where we arrived first.

Our men
play at
foote-ball
with the
Savages.

The 23 day we departed from the merchaunts, where we had bene first, and our course from thence was South and by West, and the wind was Northeast, and we ran that day and night about 5 or 6 leagues, untill we came to another harborow.

The 24, about eleven of the clocke in the forenoone, wee entered into the aforesayd new harborow, and as we came in, we did see dogs running upon the Islands. When wee were come in, there came to us foure of the people which

¹ See note 1. page 20

were with us before in the other harborow, and where we rode, we had sandie ground. We saw no wood growing, but found small pieces of wood upon the Islands, and some small pieces of sweete woode among the same. We found great Harts hornes, but could see none of the Stagges where we went, but we found their footings. As for the bones which we received of the Savages, I cannot tell of what beasts they be.

2ND VOYAGE

Sweete wood found.

The stones that we found in the countrey were blacke and some white, as I think they bee of no value; neverthelesse, I have brought examples of them to you.

The 30 of August we departed from this harborow towards England, and the wind tooke us contrary, so that we were faine to goe to another harborow the same day at 11 of the clocke. And there came to us 39 of the people, and brought us 13 Seale skins, and after we received these skinnes of them, the master sent the carpenter to change one of our boates which we had bought of them before, and they would have taken the boate from him perforce, and when they sawe they could not take it from us, they shot with their dartes at us, and stroke one of our men with one of their dartes, and John Filpo shot one of them into the brest with an arrow. And they came to us againe, and foure of our men went into the shipboate, and they shot with their dartes at our men: but our men tooke one of their people in his boate into the shipboate, and he hurt one of them with his knife, but we killed three of them in their boates: two of them were hurt with arrowes in the brests, and he that was aboard our boat was shot in with an arrow, and hurt with a sword, and beaten with staves, whom our men cast over boorde, but the people caught him and caried him on shore upon their boats, and the other two also, and so departed from us. And three of them went on shore hard by us, where they had their dogs, and those three came away from their dogs, and presently one of their dogs

A skirmish between the Savages and our men.

2ND VOYAGE came swimming towards us hard aboard the ship, where-upon our master caused the Gunner to shoote off one of the great pieces towards the people, and so the dog turned backe to land, and within an houre after there came of the people hard aboard the ship, but they would not come to us as they did come before.

The 31 of August we departed from Gilberts sound for England, and when we came out of the harborow, there came after us 17 of the people looking which way we went.

September. The 2 of September we lost sight of the land at 12 of the clocke at noone.

The third day, at night, we lost sight of the *Northstarre*, our pinnace, in a very great storme, and lay a hull,¹ tarying for them the 4 day, but could heare no more of them.

The pinnace never returned home.

Thus we shaped our course the 5 day South southeast, and sayling untill the 27 of the sayd moneth we came in sight of Cape Clere in Ireland.

The 30 day we entred into our owne chanell.

The 2 of October we had sight of the Isle of Wight.

The 3 we coasted all along the shore, and the 4 and 5.

The 6 of the sayd moneth of October we came into the river of Thames as high as Ratcliffe in safetie, God be thanked.

¹ See note 1, page 28.

The third voyage Northwestward, made by John
Davis, Gentleman, as chiefe Captaine and Pilot generall, for
the discoverie of a passage to the Isles of the Molucca,
or the coast of China, in the yeere 1587.

Written by John Janes, servant to the aforesayd M. William
Sanderson.

MAY.

THE 19 of this present moneth, about midnight, we weighed ^{3RD VOYAGE}
our ankers, set saile, and departed from Dartmouth with
two barkes and a Clincher,¹ the one named the *Elizabeth*
of Dartmouth, the other the *Sunnesshine* of London, and the
Clincher, called the *Ellin* of London: thus, in Gods name,
we set forwards with the wind at Northeast, a good fresh
gale. About 3 howers after our departure, the night being
somewhat thicke with darknesse, we had lost the pinnace,
the captaine imagining that the men had runne away with
her, willed the master of the *Sunnesshine* to stand to Sea-
wards, and see if we could descrie them, we bearing in with
the shore for Plimmouth. At length we descried her,
bare with her, and demanded what the cause was: They
answered, that the tiller of their helme was burst. So,
shaping our course West southwest, we went forward,
hoping that a hard beginning would make a good ending,
yet some of us were doubtfull of it, falling in reckoning
that she was a Clincher; neverthelesse, we put our trust
in God.

The 21 we met with the *Red Lion* of London, which came
from the coast of Spaine, which was afraid that we had

¹ A ship or boat is said to be *clincher* built, when the outside planks
lap one over the other. The sides of a boat so constructed do not present
the same smooth surface as those of a carvel, or diagonal, built boat.

3RD VOYAGE

bene men of warre, but we hailed them, and after a little conference we desired the master to carie our letters for London, directed to my unckle Sanderson, who promised us safe deliverie. And after we had heaved them a lead and a line, whereunto weo had made fast our letters, before they could get them into the ship, they fell into the sea, and so all our labour and theirs also was lost, notwithstanding they promised to certifie our departure at London, and so we departed, and the samo day we had sight of Sillic. The 22 the wind was at Northeast by East, with faire weather, and so the 23 and the 24 the like. The 25 we laied our shippes on the Lee¹ for the *Sunneshine*, who was a rommag-ing for a leake, they had 500 strokes at the pompe in a watch, the wind at Northwest.

The 26 and 27 we had faire weather, but this 27 the pinnaces foremaste was blowen over-board. The 28 the *Elizabeth* towed the pinnace, which was so much bragged of by the owners report before we came out of England, but at Sea she was like to a cart drawn with oxen. Sometimes we towed her, because she could not sailo for scant wind.

The 31 day our captaine asked if the pinnace were stanch. Peerson answered that she was as sound and as stanch as a cuppe. This made us something glad, when we sawe she would brooke the Sea, and was not leake.

JUNE.

The first 6 dayes we had faire weather: after that, for 5 dayes we had fogge and rayne, the wind beyng South. The 12, we had cleare weather. The Mariners in the *Sunneshine* and the master could not agree: the mariners would goe on their voyage a fishing, because the yeere began to waste: the master would not depart till hee had the companie of the *Elizabeth*, whereupon the master told our captaine that he was afrajd his men would shape some contrarie course while he was a sleep, and so he should

¹ The same as to "heave-to".

loose us. At length, after much talke and many threat-^{3RD VOYAGE} nings, they were content to bring us to the land, which we looked for daily.

The 13 we had fogge and raino.

The 14 day we discovered land at five of the clocke in the morning, being very great and high mountaines, the tops of the hils being covered with snow. Here the wind was variable, sometimes Northeast, East Northeast, and East by North: but wee imagined ourselves to be 16 or 17 leagues off from the shore.

The 15 we had reasonable cleare weather.

The 16 we came to an anker about 4 or 5 of the clocke after noone, the people came presently to us, after the old maner, with crying, *Il y a oute*, and shewing us Seale skinnnes. The 17 we began to set up the pinnaco that Peerson framed at Dartmouth, with the boords which heo brought from London.

The 18, Peerson and the Carpenters of the ships, began to set on the planks. The 19, as we went about an Island, were found blacke Pummise stones, and salt kernal on the rockes very white and glistering. This day, also, the master of the *Sunnesshine* tooke one of the people, a very strong lustie yong fellow.

The 20, about two of the clocke in the morning, the Savages came to the Island where our pinnace was built readie to bee launched, and tore the two upper strakes, and caried them away onely for the love of the iron in the boords. While they were about this practise wee manned the *Elizabeth's* boate to goe a shore to them: our men being either afrayd, or amazed, were so long before they came to shore, that our captaine willed them to staie, and made the Gunner givo fire to a Saker,¹ and laied the picco

¹ A *saker* was a piece of artillery from eight to ten feet in length, throwing shot varying from 4 to 7 lbs. weight. Although some authorities assert that its name was derived from the French oath *sacre*, there can be little doubt but that it was really called, like the *falcon* and

3RD VOYAGE levell with the boate which the Savages had turned on the one side, because we should not hurt them with our arrowes, and made the boate their bulwark against the arrowes which wee shot at them. Our Gunner having made all things roadie, gave fire to the peece, and fearing to hurt any of the people, and regarding the owner's profite, thought belike hee would save a Saker's shot, doubting we should have occasion to fight with men of warre, and so shot off the Saker without a bullet, we looking still when the Savages that were hurt should run away without legs, at length wee could perceive never a man hurt, but all having their legges could carie away their bodies: we had no sooner shot off the piece, but the master of the *Sunneshine* manned his boate, and came rowing towards the Island, the very sight of whom made each of them take that he had gotten, and flie away as fast as they could to another Island about two miles off, where they tooke the nayles out of the timber, and left the wood on the Isle. When we came on shore and saw how they had spoiled the boate, after much debating of the matter, we agreed that the *Elizabeth* should have her to fish withall: whereupon she was presently caried aboard and stowed.

Now after this trouble, being resolved to depart with the first wind, there fell out another matter worse then all the rest, and that was in this maner. John Churchyard, one whom our captaine had appointed as Pilot in the pinnace, came to our Captaine and master Bruton,¹ and told them

other ordnance in use at that period, after a bird. In falconry the *saker* was a hawk, appropriated to the use of knights, as was a falcon to a duke, a gerfalcon to a king, a peregrine to an earl, and a merlin to a lady.

In *Hudibras*, Part 1, Canto 2, are the following lines:—

“Of warlike engines he was author,
Devis'd for quick dispatch of slaughter:
The cannon, blunderbuss, and *saker*,
He was th' inventor of, and maker.”

¹ William Bruton was captain of the *Sunshine* in Davis's first expedition to the North-west.

that the good ship which we must all hazard our lives in, ^{3RD VOYAGE} had three hundred strokes at one time as she rode in the harbour.¹ This disquieted us all greatly, and many doubted to goe in her. At length our captaine, by whom we were all to be governed, determined rather to end his life with credite then to returne with infamie and disgrace, and so being all agreed, we purposed to live and die together, and committed our selves to the ship. Now the 21, having brought all our things aboard, about 11 or 12 of the clocke at night, we set saile and departed from those Isles, which lie in 64 degrees of latitude, our ships being now all at Sea, and wee shaping our course to goe, coasting the land to the Northwards upon the Easterne shore, which we called the shore of our Merchants, because there we met with people which traffiked with us, but here we were not without doubt of our ship. The 22 and 23 we had close foggo and raine.

The 24 being in 67 degrees and 40 minutes, we had great store of Whales, and a kinde of sea birdes which the Mariners called Cortinous.² This day about sixe of the clocke at night, we espied two of the countrey people at Sea, thinking at the first they had bene two great Seales, untill we sawe their oares glistering with the Sunne: they came rowing towardses us as fast as they could, and when they came within hearing they held up their oares, and cried *Il y a oute*, making many signes: and at last they came to us, giving us birdes for bracelets, and of them I had a darte with a bone in it, or a piece of Unicorn's horne, as I did judge. This dart he made store of, but when he saw a knife he let it go, being more desirous of the knife then of his dart; these people continued rowing after our ship the space of 3 howers.

The 25 in the morning at 7 of the clocke we descried 30

¹ This means that it required three hundred strokes at the pump during a watch of four hours, to keep the ship free of water.

² I am unable to explain this word, and believe it to be a misprint.

3RD VOYAGE Savages rowing after us, being by judgement 10 leagues off from the shore: they brought us Salmon Peales, Birdes, and Caplin, and we gave them pinnes, needles, bracelets, nailes, knives, bels, looking glasses, and other small trifles, and for a knife, a naile or a bracelet, which they call *Ponigmah*,¹ they would sell their boat, coates, or any thing they had, although they were farre from the shore. Wee had but few skinnes of them, about 20, but they made signes to us that if wee would goe to the shore, wee should have more store of *chichsanage*:² they staid with us till 11 of the clocke, at which time we went to prayer, and they departed from us.

The 26 was cloudie, the wind being at South.

The 27 faire with the same wind.

72 degr. 12
min.

London
coast.

The 28 and 29 were foggie with clouds. The 30 day we tooke the heighth and found our selves in 72 degrees and 12 min. of latitude both at noone and at night, the Sunne being 5 degr. above the horizon. At midnight the compasse set to the variation of 28 degr. to the Westward. Now having coasted the land, which we called London coast, from the 21 of this present till the 30, the sea open all to the Westwards and Northwards, the land on starboard side East from us, the winde shifted to the North, whereupon we left that shore, naming the same Hope Sanderson, and shaped our course West, and ran 40 leagues and better, without the sight of any land.

JULY.

The second we fel with a mighty banke of Ice West from us, lying North and South, which banke we would gladly have doubled out to the Northwards, but the winde would not suffer us, so that we were faine to coast it to the Southwards, hoping to double it out that we might have run so farre West till wee had found land, or els to have bene thorowly resolved of our pretended purpose.

¹ According to Davis, *Panigmah* means a needle. See page 21.

² This is, in all probability, an Eskimo word; its meaning I am unable to explain.

The 3 we fell with the Ice againe, and putting off from 3RD VOYAGE it, we sought to the Northwards, but the wind crossed us.

The 4 was foggie : so was the 5 also, with much wind at North.

The 6 being very cleere, we put our barke with oares through a gappe in the Ice, seeing the Sea free on the West side as we thought, which, falling out otherwise, caused us to returne after we had staid there betweene the Ice. The 7 and the 8 about midnight, by God's helpe, we recovered the open sea, the weather being faire and calme, and so was the 9. The 10 we coasted the Ice.¹

The 11 was foggie, but calme.

The 12 we coasted againe the Ice, having the wind at West northwest. The 13 bearing off from the Ice, we determined to goe with the shore and come to an anker, and to stay five or 6 daies for the dissolving of the Ice, hoping that the sea continually beating it, and the sunne, with the extreme force of heate which it had alwayes shining upon it, would make a quicke dispatch, that we might have a further search upon the Westerne shore. Now when we were come to the Easterne coast, the water something deepe, and some of our company fearefull withall, we durst not come to an anker but bare off into sea againe. The poore people seeing us goe away againe came rowing after us into the Sea, the waves being somewhat loftie. We truckt² with them for a few skinnes and dartes, and gave them beads, nailes, pinnes, needles, and cardes, they pointing to the shore as though they would shew us great friendship : but we litle regarding their curtesie, gave them the gentle farewell, and so departed.

The 14 we had the wind at South. The 15 there was some fault either in the barke, or the set of some currant,

¹ This ice, that so thwarted the intentions of Davis, was, undoubtedly, the so-called middle pack of Baffin's Bay.

² *To truck*, was a common expression signifying to barter or exchange one commodity for another.

3RD VOYAGE for we were drivē 6 points out of our course. The 16 we fell with y^e banko of Ice west from us. The 17 and 18 were foggie. The 19, at one a clocke after noone, we had sight of the land which we called mount Raleigh, and at 12 of the clocke at night wee were thwart the streights which we discovered the first yeere. The 20 wee traversed in the mouth of the streight, the winde being at West, with faire and cleare weather. The 21 and 22 we coasted the Northerne coast of the streights. The 23, having sayled 60 leagues Northwest into the streights, at two a clocke after noone, we ankered among many Isles in the bottome of the gulfe, naming the same the erle of Cumberlands Isles, where, riding at anker, a Whale passed by our ship and went West in among the Isles. Here the compasse set at 30 degrees Westward variation. The 24 we departed, shaping our course Southeast to recover the Sea. The 25 we were becalmed in the bottome of the gulfe, the airo being extreme hote. Master Bruton and some of the Mariners went on shore to course dogs, where they found many Graves and Trane¹ spilt on the ground, the dogs being so fat that they were scant able to runne.

The Erle of
Cumber-
lands
Isles.

The 26 wee had a pretie storme, the wind being at Southeast. The 27 and 28 were faire. The 29 we were cleare out of the streights, having coasted the South shore, and this day at noone we were in 64 degrees of latitude. The 30 in the afternoone we coasted a banke of Ice which lay on the shore, and passed by a great banko or inlet, which lay betweene 63 and 62 degrees of latitude, which we called Lumleis Inlet.² We had oftentimes as we sailed along the coast, grent rootes, the water, as it were, whirling and over-falling, as if it were the fall of some great water through a bridge. The 31, as we sayled by a head land, which wee named Warwikes Foreland, we fell into one of those over-fals with a fresh gule of wind, and bearing all our sailes, we looking upon an Island of Ice betweene us and the

The Lord
Lumleys
Inlet.

Warwikes
Foreland.

¹ Train oil.

² This position agrees with that of Frobisher Strait.

shore, had thought that our barke did make no way, which ^{3RD VOYAGE} caused us to take markes on the shore: at length we perceived our selves to go very fast, and the Island of Ice, which we saw before, was caried very forcibly with the set of the currant faster then our ship went. This day and night we passed by a very great gulfe,¹ the water whirling and roing, as it were the meetings of tides.

AUGUST.

The first having coasted a banke of Ice which was driven out at the mouth of this gulfe, wee fell with the Southermost Cape of the gulfe, which we named Childleis ^{Childleis Cape.} Cape,² which lay in 60 degrees and 10 minutes of latitude. The 2 and 3 were calme and foggie: so were the 4, 5, and 6. The 7 was faire and calme: so was the 8, with a litle gale in the morning. The 9 was faire, and we had a litle gale at night. The 10 wee had a frisking gale at West North-west. The 11 faire. The 12 we sawe five Deere on the top of an Island, called by us Darcies Island. And wee hoised ^{The Lord Darcies Island.} out our boate, and went a shore to them, thinking to have killed some of them. But when we came on shoro and had coursed them twice about the Island, they tooke the Sea and swamme towards Islands distant from that 3 leagues. When wee perceived that they had taken the Sea, we gavo them over, because our boat was so small that it could not carie us and rowe after them, they swamme so fast: but one of them was as big as a good pretie Cowe and very fat, their feete as big as Ox feete. Here upon this Island I killed with my peece a grey hare.

The 13 in the morning we saw 3 or 4 white Beares, but durst not goe on shoro to them for lacke of a good bout.

¹ Hudson Strait?

² Named after John Chudleigh or Chidley, who died in the Straits of Magellan whilst on a voyage that had for its object the circumnavigation of the globe. He was a Devonshire man, and a great friend of John Davis.

See note, page 19, *Launcester's Voyages*, published by this Society.

3RD VOYAGE This day we stroke a rocke, seeking for an harborow, and received a leake, and this day we were in 54 deg. of latitude.

The 14 we stopt our leake in a storme, not very outrageous, at noone.

The 15, being almost in 51 degrees of latitude, and not finding our ships, nor (according to their promise) any kind of marke, token, or beacon, which we willed to set up, and they protested to doe so upon every head land, Island, or Cape, within 20 leagues overy way off from their fishing place, which our captaine appointed to be betweene 54 and 55 degrees. This 15, I say, we shaped our course homewards for England, having in our ship but litle wood, and halfe a hogshhead of fresh water. Our men were very willing to depart, and no man more foreward then Peerson, for he feared to be put out of his office of Stewardship: he was so unsaciate that the allowance of two men was skant sufficient to fill his greedie appetite: but because every man was so willing to depart, and considering our want, I doubted the matter very much, fearing that the seething of our mens victuall in salt water would breed diseases, and being but fewe (yet too many for the roome, if any should be sicke) and likely that all the rest might bee infected therewith, wee consented to retorne for our owne countrey, and so we had the 16 faire, with the wind at Southwest.

The 17 we met a shippe at Sea, and, as farre as wee could judge, it was a Biskaine: wee thought she went a fishing for Whales, for in 52 degrees or thereabout, we saw very many.

The 18 was faire, with a good gale at West.

The 19, faire also, but with much wind at West and by South.

And thus, after much variable weather and change of windes, we arrived the 15 of September in Dartmouth, Anno 1587, giving thanks to God for our safe arrivall.

A TRAVERSE-BOOKE MADE BY M. JOHN DAVIS

In his third voyage for the discoverie of the Northwest passage.

ANNO 1587.

Moneth.	Dayes.	Howers.	Course.	Lengthes.	Elevation ¹ of the pole.		The Winde.	THE DISCOVER.
					Deg.	Min.		
May—	19	—	W.S.W. westerly	—	50	20	N.E.	This day we departed from Dartmouth at two of the clocke, at night. This day we descried Silly, N.W. by W. from us. This day, at noone, we departed from Silly.
	20	35	W.S.W. westerly	50	50	—	N.E.	
	21	15	W.N.W.	14	—	—	N.E. by E.	
	22	6	W.N.W.	6	—	—	N.E. by E.	
	22	3	W.N.W.	2	—	—	N.E.	The true course, distance, and latitude.
	23	15	N.W. by W.	18	—	—	N.E.	
	23	39	W.N.W.	36	50	40	—	
	23	3	W.N.W.	2	—	—	N.N.E.	
	6	6	N.W. by W.	5	—	—	N.E. by N.	The true course, distance, and latitude.
	12	3	W.N.W.	3	—	—	N.N.E.	
Noone the 24	24	12	W.N.W.	12	—	—	N.E.	
	24	24	W. n.w. Northerly	25	51	16	—	
	3	3	W.N.W.	3	—	—	N.N.E.	The true course, distance, and latitude.
	3	3	W.N.W.	24	—	—	N. by E.	
	6	6	W. by N.	5	—	—	N.	
		6	W. by N.	5	—	—	N.	

¹ By "elevation of the Pole", is meant the Latitude.

NOTE.—This "Traverse Book" is taken from the third volume of the second edition of Hakluyt, published in the year 1600.

MAY AND JUNE, 1857.

Month.	Days.	Hours.	Course.	Lengths.	Elevation of the pole.		The Wind.	THE DISCOVER.
					Per.	Min.		
May—								
		2	S.	$\frac{1}{2}$	—	—	N.	Now we lay upon the lee for the <i>Sunshine</i> , which had taken a leak of 500 strokes in a watch. ¹ The true course, distance, and latitude.
Noone the 25		24	W. by N.	20	51	30	—	
		3	W.	3	—	—	N.N.W.	
		3	W.S.W.	2	—	—	N.W.	
		1	N.W.	1	—	—	W.N.W.	
		2	W.N.W.	$1\frac{1}{2}$	—	—	N.	The true course, distance, &c.
		3	W.N.W.	$1\frac{1}{2}$	—	—	N.	
		3	—	—	—	—	Calm	
		4	W.N.W.	4	—	—	S.S.E.	
		5	W.	6	—	—	S.S.E.	
Noone the 26		24	W. by N. Westerly	23	51	40	—	The true course, distance, &c. We lay at hull, ² with much wind, raine, and fog. The common course supposed. We towed the pinnesse 18 hours of this day. The true course, distance, &c.
		11	W.	16	—	—	S.S.E.	
		6	W.N.W.	5	—	—	S.E.	
		7	W.	2	—	—	—	
Noone the 27		24	W. northerly	23	—	—	—	
Noone the 28		24	W.	20	52	13	E.S.E.	The true course, distance, &c.
Noone the 28		28	W. by n. Northerly	43	52	13	—	
Noone the 29		24	N.W.	30	—	—	S. by E.	
		6	N.W.	10	—	—	S.	
		3	N. by W.	2	—	—	W. by N.	
		3	W. by N.	3	—	—	W. by S.	The true course, &c.
		12	N.W.	12	—	—	S.S.W.	
Noone the 30		48	N.W. by N.	65	54	50	—	

¹ "Hove to" for the *Sunshine*, which had sprung a leak, and required 500 strokes of the pump, per watch, to keep the water from gaining.

² See note 1, page 23.

June—	30	9	N.W.	12	—	S.W.	The true course, &c.
	1	9	N.W. by W.	12	—	S.S.W.	
		3	W.N.W.	3	—	N.N.E.	
		3	W. by N.	4	—	N.	
	24	24	W.n.w. Northerly	27	55	—	The true course, &c.
	12	12	W.	10	—	N.N.W.	
		9	N.W.	8	—	E.N.E.	
		3	N.W.	24	—	E.N.E.	
	1	24	W.n.w. Westerly	17	55	—	The true course, &c.
		12	N.W.	16	—	E.S.E.	
		6	N.W.	7	—	S.	
		6	N.W.	8	—	S.S.W.	
Noone the	2	24	N.W. Northerly	32	55	—	The true course, &c. The true course, &c., drawn from divers traverses.
Noone the	5	72	W. by S. Southerly	45	56	—	
Noone the	6	24	S.W.	16	—	W.N.W.	
		7	S.W. by W.	6	—	W. by N.	
		5	—	—	—	Calme	The true course, distance, and latitude for 96 heures.
		3	W.N.W.	1	—	S.	
Noone the	7	9	W.N.W.	12	—	S.	
		12	W.N.W.	20	—	S.	
		3	W.N.W.	4	—	S.	
Noone the	8	9	W.N.W.	7	—	S.	
		12	W.N.W.	13	—	S.	
Noone the	9	12	W.N.W.	86	57	S.E.	
Noone the	9	96	W. by N. northerly	4	—	—	
		3	W.N.W.	2	—	S.E.	
		3	W.N.W.	1	—	S.E.	
		6	W.N.W.	16½	—	Calme	
		12	W.N.W.	12	—	E.	
Noone the	10	7	W.N.W.	2	—	E.	
		2	N.W.	2	—	E.	

JUNE AND JULY, 1587.

Moneth.	Payes.	Howers.	Course.	Leagues.	Elevation of the pole.		The Winde.	THE DISCOVERY.
					Deg.	Min.		
June— Noone the 11		15 12 12 72	N.W. N.W. N.W. N.w. by w. northerly	18 12 13 78	— — — 59	— — — 50	E.N.E. E.N.E. E. by S. —	The true course, &c., for 72 houres.
Noone the 12		24	N.n.w. Westerly	26	60	58	E. by N.	This day, in the morning, at five of the clocke, we discovered land, being distant from us at the neereest place sixteene leagues. This land in generall lay Northwest and to the Westwards, being very mountainous. The winde was this day variable, and the aire sometime foggie, and sometime cleere. The foresayd land bare from us (so neere as we could iudge) North, Northwest, and Southeast.
Noone the 13		24	N.N.W.	32	62	30	N.E.	
Noone the 14		24	W. N.W.	7	—	—	N.	
		9	N.W.	2	—	—	N.N.E.	
		3	N.W. by N.	2	—	—	N.E. by N.	The true course, &c. This 16 of June, at 5 of the clocke in the afternoone, being in the latitude of 64 degrees, through Gods helpe we came to an anker among many low islands, which lay before the high land. The 17 of June we set up our pinnesse. The 20 she was spoiled by the Savages. At midnight, the 21 of June, we departed from this coast, our two barks for their fishing voyage, and my selfe in the pinnesse for the discovery. From midnight, the 21, we shaped our course as foloweth.*
		3	N.N.W.	8	—	—	N.E.	
		9						
		15						
Noone the 15		24	N.W. Northerly	23	63	20	—	The true course, &c. This 16 of June, at 5 of the clocke in the afternoone, being in the latitude of 64 degrees, through Gods helpe we came to an anker among many low islands, which lay before the high land. The 17 of June we set up our pinnesse. The 20 she was spoiled by the Savages. At midnight, the 21 of June, we departed from this coast, our two barks for their fishing voyage, and my selfe in the pinnesse for the discovery. From midnight, the 21, we shaped our course as foloweth.*
Noone the 16		24	N.N.E. Easterly	14	64	—	—	
		17						
		20						
At midnight		8	W.N.W.	7	—	—	S.E.	The true course, &c. This 16 of June, at 5 of the clocke in the afternoone, being in the latitude of 64 degrees, through Gods helpe we came to an anker among many low islands, which lay before the high land. The 17 of June we set up our pinnesse. The 20 she was spoiled by the Savages. At midnight, the 21 of June, we departed from this coast, our two barks for their fishing voyage, and my selfe in the pinnesse for the discovery. From midnight, the 21, we shaped our course as foloweth.
ye 21		4	N.W.	6	—	—	S.E.	
Noone the 22		13	N.W.	18	—	—	S.E.	
		13						

Noone the 23	11	N.	13	—	S.E.	At this time we saw great store of whales.
Noone the 24	36	N.W. by N.	42	65	—	The true course, &c.
Noone the 25	24	N. by E. Northerly	41	67	S.S.E.	The true course, &c.
Noone the 26	48	N.	—	—	S.	This 24 of June, at 6 of the clocke at night, we met two savages at sea in their small canoas, unto whom we gave bracelets, and nailes, for skins and birds. At 9 of the clocke they departed from us. The next day, at 7 of the clocke in the morning, there came unto us 30 savages 20 leagues off the shore, entreuting us to goe to the shore. We had of them fish, birds, skinned darts, and their coats from their backs, for bracelets, nailes, knives, &c. They remained with us foure houres, and departed.
Noone the 27	72	N. Westerly	52	70	—	The true course, &c., for 72 houres.
Noone the 30	72	N.	43	72	—	The true course, &c. Since the 21 of this moneth I have continually coasted the shore of Gronland, having the sea all open towards the West, and the land on ye starboord side East from me. For these last 4 dayes the weather hath beene extreame hot and very calme, the Sun being 5 degrees above the horizon at midnight. The compass, in this place varieth 28 degrees toward ye West.
July—	1	W. by S. Westerly	44	71	N.W. by N.	The true course, &c. This day, at noone, wee coasted a mighty banke of ice West from us.
Noone the 3	24	S.E.	12	71	N.	This day we fell againe with the ice, seeking to double it out by the North.
Noone the 5	8	N.N.W.	11	71	N.	The true course, &c.
Noone the 6	48	S.S.E.	36	70	Variable	The true course, &c. This 6 of July we put our barke thorow the ice, seeing the sea free on the West side: and having sailed 5 leagues West, we fell with another mighty barre, which we could not passe: and there
Noone the 7	24	S.S.W.	22	69		
Noone the 8	8					

JULY, 1587.

Month.	Days.	Howers.	Course.	Leagues.	Elevation of the pole.		The Winde.	THE DISCOVER.
					Deg.	Min.		
July—								
Noone the 9	9	72	E.S.E.	7	68	50	Calm	fore returning againe, we freed our selves the 8 of this moneth, at midnight, and so recovered the sea through Gods favour by faire windes, the weather being very calme.
Noone the 10	24		S.E. by S.	8	68	30	E. by N.	
Noone the 11	24		E.N.E.	11½	68	45	Variable	
Noone the 12	24		S.S.E.	16	68	—	N.N.W.	
Noone the 13	24		E. by S.	20	—	—	S.	
Noone the 14	24		W. by N.	11	67	50	S.	This day the people came to us off the shore, and bartered with us. Being within the isles and not finding good ankorage, we bare off againe into the sea.
Noone the 15	24		W.S.W.	5	67	45	E.	
Noone the 16	24		S.w. by w. westerly	23	67	10	S.	
Noone the 18	48		S. by W.	30	65	33	N., Fog.	
Noone the 19	24		W. southerly	13	65	30	S., Fog.	
	20	—	—	—	—	—	—	The true course, &c. This day a great current set us West 6 points from our course. The true course, &c. This day we fell with a mighty banke of ice West of us. The true course, &c. Collected by divers experiments. The true course, &c. This 19 of July, at one a clocke in the afternoon, we had sight of the land of Mount Raleigh, and by 12 of the clocke at night, wee were thwart the Streights, which (by Gods helpe) I discovered the first yere. The 20 day wee traversed in the mouth of the sayd Streights with a contrary winde, being West, and faire weather.

This 23 day, at 2 of the clocke in the afternoon, having sailed 60 leagues Northwest, we ankered among an huge number of isles lying in the bottome of the sayd supposed passage, at which place the water riseth 4 fadome upright. Here, as we rode at anker, a great whale passed by us, and swam West in among the isles. In this place a S.W. by W. moone maketh a full sea. Here the compass varied 30 degrees.

The 24 day, at 5 of the clocke in the morning, we set saile, departing from this place, and shaping our course S.E. to recover the maine Ocean againe.

This 25 we were becalmed almost in the bottom of the Streights, and had the weather marvellous extreme hot.

This day, being in the Streights, we had a very quicke storme.

Being still in the Streights, we had this day faire weather. At this present we got cleere of the Streights, having coasted the South shore, the land trending from hence S.W. by S.

This day we coasted the shore, a banke of ice lying thereupon. Also this 30 of July, in the afternoon we crossed over the entrance or mouth of a great inlet or passage, being 20 leagues broad, and situate betwene 62 and 63 degrees. In which place we had 8 or 9 great rases, currents, or overfalls, lothsomly crying like the rage of the waters under London bridge, and bending their course into the sayd gulfe.

This 31, at noon, comming close by a foreland or great cape, we fell into a mighty rase, where an island of ice was carried by the force of the current as fast as our

AUGUST AND SEPTEMBER, 1887.

Month.	Days.	Hours.	Course.	Leagues.	Elevation of the pole.		The Winde.	The Discover.
					Deg.	Min.		
August—								
Noone the 1	24		S.E. by S.	16	61	10	W.S.W.	barke could saile with lum winde, all sailes bearing. This cape, as it was the most Southerly limit of the gulfe which we passed over the 30 day of this moneth, so was it the North promontory or first beginning of another very great inlet, whose South limit at this present wee saw not. Which inlet or gulfe this afternoon, and in the night, we passed over : where to our great admiration we saw the sea falling down into the gulfe with a mighty overfal, and roling, and with divers circular motions like whirlpooles, in such sort as forcible streames passe thorow the arches of bridges. The true course, &c. This first of August we fell with the promontory of the sayd gulfe or second passage, having coasted, by divers courses for our savegard, a great banke of the ice driven out of that gulfe. The true course, &c.
Noone the 3	48		S.S.E.	16	60	26	Variable	
Noone the 6	72		S.E. Southerly	22	59	35	Variable with calme	
7	24		S.S.E.	22	58	40	W.S.W.	
8	24		S.E.	13	58	12	W., fog	
9	24		S. by W.	13	57	30	Variable and calme	
10	24		S.S.E.	17	56	40	S.W. by W	
11	24		S.E. easterly	40	55	13	W.N.W.	
12	24		S.E. easterly	20	54	32	W.S.W.	
13	24		S.S.E.	4	54	—	N.W.	
								This day, seeking for our ships that went to fish, we

14	24	S.S.E.	28	52	40	N.W.	strooke on a rocke, being among many iles, and had a great leake.
*Noone ye	15	—	—	52	12	S.S.W.	This day we stopped our leake in a storme. The 15 of
16	20	E.s.e. halfe point S.	50	51	—	S.W.	August, at noon, being in the latitude of 52 degrees
17	24	E. by S.	30	50	40	S.	12 min., and 16 leagues from the shore, we shaped our course for England, in Gods name, as followeth.*
							The true latitude.
							The true course, &c.
							The true course, &c.
							a Biscaine bound either for the Grand bay or for the passage. He chased us.
							The true course, &c.
							The true course, &c.
18	24	E. by N. northerly	49	51	18	W.	The true course, &c.
19	24	E. halfe point north	51	51	35	Variable, W. & S.	The true course, &c.
20	24	F.S.E.	31	50	50	S.W.	The true course, &c.
Noone the	22	E. by N.	68	51	30	S.S.W.	The true course, &c.
23	24	E. by N. Northerly	33	51	52	S.	The true course, &c.
24	24	E. by N.	31	52	10	Variable	The true course, &c.
							This 24 of August observing the variation, I found the compass to vary towards the East, from the true Meridian, one degree.
Noone the	27	E. Northerly	40	52	23	Variable and calme	The true course, &c., for 72 hours.
Noone the	29	E.S.E.	47	51	28	Variable, W. & N.	The true course, &c.
Noone the	31	S.e. by e. Easterly	14	51	9	Variable	The true course, &c.
September 2	48	E. Southerly	65	51	—	N.W.	The true course, &c.
3	24	E. by S. Easterly	24	50	50	W.N.W.	The true course, &c.
4	24	S.E. by E.	20	50	21	N.N.E.	The true course, &c.
5	24	S.E. by E.	18	49	48	N.N.E.	The true course, &c.
6	24	E. by S.	15	49	40	N.	55 leagues frō Sillic.
							The true course, &c.

Now we supposed our selves to be

SEPTEMBER, 1587.

Moneth.	Dayes.	Howers.	Course.	Leagues.	Elevation of the pole.		The Winde.	The Discover.
					Deg.	Min.		
September—	7	24	E.S.E.	20	49	15	N.N.W.	The true course, &c.
	8	24	N.E.	18	49	50		
	9	24	W.S.W.	7	49	42	Variable	
	10	24	S.E. by E.	8 $\frac{1}{2}$	49	28		
	11	24	N.E. by E.	10	49	45	Variable	
	12	24	N.W. by W.	6	50	—	N.E.	
	13	24	E. by S. southerly	15	49	47	N.E.	This 15 of Septeber, 1587, we arrived at Dartmouth.
	15	—	—	—	—	—	—	

Under the title of the *hours*, where any number exceedeth 24, it is the summe or casting up of so many other dayes and parts of dayes going next before, as containe the fore sayd summe.

*A letter of the sayd M. JOHN DAVIS, written to M. SANDERSON,
of London, concerning his forewritten voyage.*

Good M. Sanderson, with Gods great mercy I have made my safe returne in health, with all my companie, and have sailed threescore leagues further then my determination at my departure. I have bene in 73 degrees, finding the Sea all open, and forty leagues betweene land and land.

The passage is most probable, the execution easie, as at my comming you shall fully know.

Yestorday, the 15 of September, I landed all wearie, therefore I pray you pardon my shortnesse.

Sandridge, this 16 of September, anno 1587.

Yours equall as mine owne, which by triall you
shall best know,

JOHN DAVIS.

The [3rd] voiage¹ of the right honorable George, Erle
of Cumberland, to the Azores, &c.

Written by the excellent Mathematician and Enginier, master
Edward Wright.

THE right honorable the Erle of Cumberland having at his owne charges prepared his small Fleet of foure Sailes onely, viz.: The *Victorie*, one of the Queenes ships royall; the *Meg* and *Margaret*, small ships (one of which also he was forced soone after to send home againe, finding her not ablo to endure the Sea), and a small *Caravell*, and having assembled together about 400 men (or fewer), of gentlemen, souldiers, and saylors, embarked himself and them, and set saile from the Sound of Plimmouth in Devonshire, the 18 day of June, 1589, being accompanied with these captaines and gentlemen which hereafter folow.

Captaine Christopher Lister, a man of great resolution; captaine Edward Carelesse, *aliàs* Wright, who, in sir Francis Drakes West Indian voyage to S. Domingo and Carthagena, was captaine of the *Hope*. Captaine Boswell, M. Mervin, M. Henry Long, M. Partridge, M. Norton, M. William Mounson, captaine of the *Meg*, and his vice-admirall, now sir William Mounson, M. Pigeon, captaine of the *Caravell*.

About 3 dayes after our departure from Plimmouth we met with 3 French ships, whereof one was of Nowhaven, another of S. Malos, and so finding them to be Leaguers and lawful Prises, we tooke them and sent two of them for England with all their loding, which was fish for the most

¹ The account of this voyage is taken from the second volume of the second edition of Hakluyt, printed in 1599.

part from New-found-land, saving that there was part thereof distributed amongst our small Fleet, as we could find stowage for the same: and in the third, all their men were sent home into France. The same day and the day following we met with some other ships, whom (when after some conference had with them, we perceived plainly to be of Roterodam and Emden, bound for Rochell) we dismissed.

The 28 and 29 dayes we met divers of our English ships, returning from the Portugall voiage, which my lord relieved with victuals. The 13 day of July being Sunday, in the morning, we espied 11 ships without sight of y^e coast of Spaine, in the height of 39 degrees, whom wee presently prepared for, and provided to meet them, having first set forth captaine Mounson in the *Meg*, before us, to descry whence they were.

The *Meg* approaching neere, there passed some shot betwixt them, whereby, as also by their Admiral and Vice-admirall putting forth their flags, we perceived that some fight was likely to follow. Having therefore fitted our selves for them, we made what hast we could towards them, with regard alwayes to get the wind of them, and about 10 or 11 of the clocke, we came up to them with the *Victory*. But after some few shot and some little fight passed betwixt us, they yeelded themselves, and the masters of them all came aboard us, shewing their several Pasports from the cities of Hamburg and Lubeck, from Breme, Pomerania, and Calice.

They had in them certaine bags of Pepper and Synamom, which they confessed to be the goods of a Jew in Lisbon, which should have bene caried by them into their country to his Factor there, and so finding it by their owne confession to be lawful Prise, the same was soone after taken and divided amongst our whole company, the value wherof was esteemed to be about 4500 pounds, at two shillings the pound.¹

¹ The value of these prizes would be about £450 sterling.

EARL OF
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3RD VOYAGE

The 17 day the foresaid ships were dismissed, but 7 of their men that were willing to go along with us for sailers, we tooke to helpe us, and so held on our course for the Azores.

The 1 of August, being Friday in the morning, we had sight of the Iland of S. Michael, being one of the Eastermost of the Azores, toward which we sailed all that day, and at night having put foorth a Spanish flag in our maintop, that so they might the lesse suspect us, we approched neere to the chiefe towne and road of that Iland, where we espied 3 ships riding at anker and some other vossels: all which we determined to take in the darke of the night, and accordingly attempted about 10 or 11 of the clocke, sending our boats well manned to cut their cables and hausers, and let them drive into the sea. Our men comming to them, found y^e one of those greatest ships was the *Falcon* of London, being there under a Scottish Pilot who bare the name of her as his own. But 3 other smal ships that lay neere under the castle there, our men let loose and towed them away unto us, most of the Spaniards that were in them leaping over-boord and swimming to shore with lowd and lamentable outcries, which they of the towne hearing were in an uprore, and answered with the like crying. The castle discharged some great shot at our boats, but shooting without marke by reason of the darknesse they did us no hurt. The Scots likewise discharged 3 great pieces into the aire to make the Spaniards thinke they were their friends and our enemies, and shortly after the Scottish master, and some other with him, came aboard to my lord doing their dutie, and offring their service, &c. These 3 ships were fraught with wine and Sallet-oile from Sivil.

3 ships
forcibly
towed out
of harbour.

The same day our Caravel chased a Spanish Caravel to shore at S. Michael, which caried letters thithor, by which we learned that the Caraks were departed from Tercera 8 days before.

The 7 of August we had sight of a litle ship which wee chased towards Tercera with our pinnasse (the weather being calme), and towards evening we overtooke her, there were in her 30 tunnes of good Madera wine, certaine woollen cloth, silke, taffeta, &c.

The 14 of August we came to the Iland of Flores, where we determined to take in some fresh water and fresh victuals, such as the Iland did afford. So we manned our boats with some 120 men and rowed towards the shore: whereto when we approached, the inhabitants that were assembled at the landing place put foorth a flag of truce, whereupon we also did the like.

When we came to them, my Lord gave them to understand by his Portugall interpreter that he was a friend to their king Don Antonio, and came not any way to injury thō, but that he ment onely to have some fresh water and fresh victuals of them, by way of exchange for some provision that he had, as oile, wine, or pepper, to which they presently agreed willingly, and sent some of their company for beeves and sheepe, and we in the meane season marched Southward about a mile to Villa de Santa Cruz, from whence all the inhabitants yong and old were departed, and not any thing of value left. We demanding of them what was the cause hereof, they answered Feare; as their usuall maner was when any ships came neere their coast.

We found that part of the Iland to be full of great rockie barren hils and mountains, litle inhabited by reason that it is molested with ships of war, which might partly appeare by this towne of Santa Cruz (being one of their chiefe townes) which was all ruinous, and (as it were) but the reliques of the ancient towne which had bene burnt about two yeeres before by certaine English ships of war, as the inhabitants there reported.

At evening, as we were in rowing towards the *Victory*, an huge fish pursued us for the space well nigh of two miles

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together, distant for the most part frō the boats sterne not a speares length, and sometimes so neere that the boat stroke upon him, the tips of whose finnes about the ghills (appearing oft times above the water) were by estimation 4 or 5 yards asunder, and his jawes gaping a yard and an halfe wide, which put us in fear of over-turning the pinnasse, but God bee thanked (rowing as hard as we could) we escaped.

When we were about Flores a litle ship called the *Drake* brought us word that the Caraks were at Tercera, of which newes we were very glad, & sped us thitherward with all the speed we could: and by the way we came to Fayal road the seven and twentieth day of August, after sunne set, where we espied certaine shippes ryding at anker, to whom we sent in our Skiffe with Captaine Lyster and Captaine Monson in her to discover the roaders: and least any daunger should happen to our boate, we sent in likewise the *Sausie-Jacke*¹ and the small Caravell; but the wind being off the shoare, the shippes were not able to fet it so nigh as the Spaniards ride, which neverthesse the boate did, and clapped a shippe aboard of two hundred and fiftie tunnes, which caried in her fourteene cast peeces, and continued fight alone with her for the space of one houre, untill the comming up of other boates to the reskue of her, which were sent from the shippes, and then a fresh boarding her againe, one boate in the quarter, another in the hause, wee entred her on the one side, and all the Spaniards lept overboard on the other, save Juan de Palma the Captaine of her and two or three more, and thus we became possessors of her.

This shippe was mored to the Castle, which shot at us all this while: the onely hurt which we received of all this shot was this, that the master of our Caravell had the calfe of his leggo shot away. This shippe was laden with Sugar,

¹ This vessel must have joined the squadron after its departure from Plymouth.

Ginger, and hides, lately come from S. Juan de Puerto Rico; after we had towed her cleare off the castle, we rowed in againe with our boats, and fetched out five small ships more, one laden with hides, another with Elephants teeth, graines, coco-nuts, and goates skins come from Guinie, another with woad,¹ and two with dogge-fish, which two last we let drive in the sea, making none account of them. The other foure we sent for England the 30 of August.

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At the taking of these Prizes were consorted with us some other small men of warre, as Maister John Davis, with his shippe, Pinnesse, and Boate, Captain Markesburie with his ship, whose owner was Sir Walter Raleigh, the Barko of Lime, which was also consorted with us before.

The last of August in the morning we came in sight of Tercera, being about some nine or ten leagues from shoare, where we espied comming towards us a small boat under saile, which seemed somewhat strange unto us, being so farre from land, and no shippe in sight, to which they might belong: but comming neere, they put us out of doubt, shewing they were English men (eight in number) that had lately beene prisoners in Tercera, and finding opportunitie to escape at that time, with that small boat committed themselves to the sea under Gods providence, having no other yard for their maine saile but two pipe staves tyed together by the endes, and no more provision of victuals then they could bring in their pockets and bosomes. Having taken them all into the *Victorie*, they gave us certaine intelligence, that the Carackes were departed from thence about a weeke before.

An escape
of 8 Eng-
lishmen
from
Tercera.

Thus beeing without any further hope of those Caraks, we resolved to returne for Fayall, with intent to surprize the towne, but, untill the ninth of September, we had

¹ Woad, a Crucifer, the *Isatis tinctoria*; from the leaves of this shrub a blue dye was extracted, and much used.

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either the winde so contrary, or the weather so calme, that in all that time we made scarce nine or ten leagues way, lingring up and downe not farre from Pico.

The tenth of September, being Wednesday in the afternoone, wee came againe to Fayal roade. Whereupon immediatly my Lord sent Captaine Lister, with one of Graciosa (whom Captaine Munson had before taken) and some others, towards Fayal, whom certaine of the Inhabitants met in a boat, and came with Captaine Lister to my Lord, to whom hee gave this choice : either to suffer him quietly to enter into the platforme¹ there without resistance, where he and his companie would remaine a space without offering any injurie to them, that they (the Inhabitants) might come unto him and compound for the ransome of the Towne ; or else to stand to the hazard of warre.

With these words they returned to the towne : but the keepers of the platforme answered, that it was against their oath and allegiance to king Philip to give over without fight. Whereupon my Lord commanded the boates of every ship to be presently manned, and soone after landed his men on the sandie shoare, under the side of an hill, about halfe a league to the Northwards from the platforme : upon the toppe of which hill certaine horsemen and footmen shewed themselves, and other two companics also appeared, with ensignes displayed, the one before the towne upon the shore by the sea side, which marched towards our landing place as though they would encounter us ; the other in a valley to the Southwards of the platforme, as if they would have come to helpe the Townesmen : during which time they in the platforme also played upon us with great Ordinance.

Notwithstanding my L. (having set his men in order)

¹ A *platform*, in fortification, was a raised earthwork, on which cannon were mounted. It was also a kind of bastion, made on a re-entering angle, its two faces making a right line.

marched along the sea shore upon the sands, betwixt the sea and the towne towards the platforme for the space of a mile or more, and then the shore growing rockie, and permitting no further progresse without much difficultie, he entred into the towne and passed through the street without resistance unto the platforme; for those companies before mentioned at my Lo. approaching, were soone dispersed and suddenly vanished.

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The taking
of the towne
and plat-
forme of
Fayal.

Likewise they of the platforme, being all fled at my Lords comming thither, left him and his company to scale the walles, to enter and take possession without resistance.

In the meane time our shippes ceased not to batter the foresaid Towne and Platforme with great shotte, till such time as we saw the Rod-Crosse of England flourishing upon the Forefront thereof.

This Fayal is the principall towne in all that island, and is situate directly over against the high and mighty mountaine Pico, lying towards the West Northwest from that mountaine, being devided therefrom by a narrow Sea, which at that place is by estimation about some two or three leagues in bredth betweene the Iles of Fayal and Pico.

A descrip-
tion of the
towne of
Fayal.

The towne conteyned some three hundred houtholds, their houses were faire and strongly builded of lime and stone, and double covered with hollow tyles, much like our rooffe-tyles, but that they are lesse at the one end then at the other.

Every house almost had a cisterne or well in a garden on the backe side: in which garden grew vines (with ripe clusters of grapes) making pleasant shadowes, and Tabacco nowe commonly knowen and used in England, wherewith their women there dye their faces reddish, to make them seeme fresh and young: Pepper, Indian and common; figge trees bearing both white and red figges; Peach trees not growing very tall: Orenge, Limons, Quinces, Potato-

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roots, &c. Sweete wood (Ceder I thinke) is there very common, even for building and firing.

My Lord having possessed himselfe of the towne and platforme, and being carefull of the preservation of the towne, gave commandement that no mariner or souldier should enter into any house to make any spoyle thereof. But especially he was carefull of the Churches and houses of religion there should be kept inviolate, which was accordingly performed, through his appointment of guarders and keepers for those places: but the rest of the towne eyther for want of the former inhibition, or for desire of spoyle and prey, was rifled, and ransacked by the souldiers and mariners, who scarcely left any house unsearched, out of which they tooke such things as liked them, as chestes of sweete wood, chaires, cloth, coverlets, hangings, bedding, appa-
rell: and further ranged into the countrey, where some of them also were hurt by the inhabitants. The Friery there, conteyning and maintayning thirtie Franciscan Friers (among whom we could not finde any one able to speake true Latine), was builded by a Fryer of Angra in Tercera of the same order, about the yeare of our Lord one thousand five hundred and sixe. The tables in the hall had seates for the one side onely, and were alwayes coverod, as readie at all times for dinner or supper.

From Wednesday in the afternoone, at which time we entred the towne, til Saturday night, we continued there untill the Inhabitants had agreed and payed for the ransome of the towne, two thousand duckats, most part whereof was Church-plate.

We found in the platforme eight and fiftie yron peeces of Ordinance, whereof thre and twentie (as I remember) or more were readie mounted upon their carriages, betweene Barricados,¹ upon a platforme towards the sea-side, all

¹ A *barricadœ* was a hastily-constructed defence, consisting of barrels of earth, carts, trees, lumber, etc.

which Ordinance wee tooke, and set the platforme on fire, and so departed: My Lord having invited to dinner in the *Victorie*, on the Sunday following, so many of the Inhabitants as would willingly come (save onely Diego Gomes the Governour, who came but once onely to parle about the ransome) onely foure came and were well entertained, and solemnely dismissed with sound of drumme and trumpets, and a peale of Ordinance: to whom my Lord delivered his letter subscribed with his owne hand, importing a request to all other Englishmen to abstaine from any further molesting them, save onely for fresh water, and victuals necessary for their intended voyage. During our abode here (viz. the 11 of September) two men came out of Pico which had beene prisoners there: Also at Fayal we set at libertie a prisoner translated from S. Jago who was cousin to a servant of Don Anthonio, king of Portugall, in England: These prisoners we deteyned with us.

On Munday we sent our boates a shore for fresh water, which (by reason of the raine that fell the former night) came plentifully running downe the hilles, and would otherwise have beene hard to be gotten there. On Tuesday likewise having not yet sufficiently served our turnes, we sent againe for fresh water, which was then not so casie to be gotten as the day before, by reason of a great winde: which in the afternoone increased also in such sort, that we thought it not safe to ride so neere the land: whereupon we weyed anker and so departed Northwest and by west, alongst the coast of Fayal Island. Some of the Inhabitants comming aboard to us this day, tolde us that alwayes about that time of the yeere such windes West Southwest blew on that coast.

This day, as we sayled neere Saint Georges Island, a huge fish lying still a litle under water, or rather even therewith, appeared hard by a head of us, the sea breaking upon his backe, which was blacke coloured, in such sort as

deeming at the first it had bene a rocke, and the ship stemming directly with him, we were put in a sudden feare for the time: till soone after we saw him move out of the way.

The 16 of September in the night it lightened much, whereupon there followed great winds and raine, which continued the 17, 18, 19, 20, and 21 of the same. The 23 of September we came againe into Faial road to weigh an anker which (for haste and feare of foule weather) wee had left there before, where we went on shoro to see the towne, the peoplo (as we thought) having now settled themselves there againe, but notwithstanding many of them through too much distrustfulnesse, departed and prepared to depart with their packets at the first sight of us: untill such time as they were assured by my Lord, that our coming was not any way to injury them, but especially to have fresh water, and some other things needefull for us, contenting them for the same.

So then we viewed the Towne quietly, and bought such things as we desired for our money as if we had bene in England. And they helped to fill us in fresh water, receiving for their paines such satisfaction as contented them.

The 25 day we were forced againe to depart from thence, before we had sufficiently watered, by reason of a great tempest that suddenly arose in the night, in so much that my Lord himselfe, soone after midnight, rayseed our men out of their Cabines to wey anker, himselfe also together with them haling at the Capstan, and after chearing them up with wine.

The next day we sent our *Caravel* and the *Sawsie-Jacke* to the road of Saint Michael to see what they could espie: we following after them upon the 27 day, plying to and fro, came within sight of S. Michael, but by contrary windes the 28, 29, and 30 dayes wee were driven to leewarde, and could not get neere the Island.

The first of October wee sayled amongst Tercera, and

even against Brasill (a promontorie neere to Angra, the strongest Towne in that Island), wee espied some boates comming to the Towne, and made out towardses them: but being neere to the lande they ranne to shoare and escaped us.

In the afternoone we came neere to Graciosa, whereupon my Lord forthwith sent Captain Lister to the Ilanders to let them understand that his desire was onely to have water and wine of them, and some fresh victuals, and not any further to trouble them. They answered they could give no resolute answere to this demaund, untill the Governors of the Iland had consulted therupon, and therefore desired him to send againe to them the next day.

Upon the second day of October, early in the morning, we sent forth our long boat and Pinnesse, with emptie Caske, and about some fiftie or sixty men, together with the *Margaret*, and Captaine Davis his shippe: for we now wanted all the rest of our consortes. But when our men would have landed, the Ilanders shot at them, and would not suffer them. And troupes of men appeared upon land, with ensignes displayed, to resist us. So our boates rowed alongst the shoare, to finde some place where they might land, not with too much disadvantage: our shippes and they still shooting at the Ilanders: but no place could be founde where they might land without great perill of losing many of their lives, and so were constrayned to retire without receiving any answere, as was promised the day before. We had three men hurt in this conflict, whilest our boates were together in consulting what was best to be done: two of them were stroken with a great shot (which the Ilanders drew from place to place with Oxen), where-with the one lost his hand, and the other his life within two or three dayes after: the third was shot into his necke with a small shot, without any great hurt.

With these newes our company returned backe againe at

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night, whereupon preparation was made to goe to them againe the next day: but the day was farre spent before we could come neere them with our ship: neither could we finde any good ground to anker in, where we might lye to batter the Towne, and further we could finde no landing place, without great danger to loose many men: which might turne not only to the overthrow of our voiage, but also put the Queenes ship in great perill for want of men to bring her home. Therefore my Lord thought it best to write to them to this effect: 'That he could not a litle marvell at their inhumanitie and crueltie which they had showed towards his men, seeing they were sent by him unto them in peaceable manner to receive their answere which they had promised to give the day before: and that were it not for Don Antonio their lawful king his sake, he could not put up so great injury at their hands without just revengement upon them: notwithstanding for Don Antonio his sake, whose friend he was, he was yet content to send to them once againe for their answere: At night Captaine Lister returned with this answere from them. That their Gunner shot off one of their peeces, which was charged with poulder onely, and was stopped; which our men thinking it had bin shot at them, shot againe, and so beganne the fight: and that the next morning they would send my Lord a resolute answere to his demaunde, for as yet they could not knowe their Governours minde herein. The next morning there came unto us a boate from the shoare with a flagge of truce, wherein were three of the chiefe men of the Island, who agreed with my Lorde that hee should have of them sixtie buttes of wine, and fresh victuals to refresh himselfe and his companie withall: but as for fresh water, they could not satisfie our neede therein, having themselves little or none, saving such as they saved in vessels or cisternes when it rayned, and that they had rather give us two tunnes of wine then one of water; but they requested that our soul-

diers might not come on shoare, for they themselves would bring all they had promised to the water-side, which request was graunted, we keeping one of them aboard with us untill their promise was performed, and the other we sent to shoare with our emptie Caske, and some of our men to helpe to fill, and bring them away with such other provision as was promised : so the *Margaret*, Captaine Davis his shippe, and another of Weymouth, stayed ryding at anker before the Towne to take in our provision. This shippe of Weymouth came to us the day before, and had taken a rich Prize (as it was reported) worth sixteene thousand pound, which brought us newes that the West-Indian Fleete was not yet come, but would come very shortly.

But we with the *Victorie* put off to sea, and upon Saturday, the fourth of October, we tooke a French shippe of Saint Malo (a citie of the unholy league) loden with fish from Newfoundland : which had beene in so great a tempest that she was constrayned to cut her mayne mast overboard for her safetie, and was now comming to Graciosa to repaire her selfe. But so hardly it befell her that she did not onely not repaire her former losses, but lost all that remayned unto us. The chiefe of her men we tooke into our ship, and sent some of our men, mariners, and souldiers, into her, to bring her into England.

Upon the Sunday following at night, all our promised provision was brought unto us from Graciosa : and we friendly dismissed the Ilanders with a peale of Ordinance.

Upon Munday, Tuesday, and Wednesday, we plyed to and fro about those Islandes, being very rough weather. And upon Thursday at night, being driven some three or foure leagues from Tercera, we saw fiteene saile of the West-Indian Fleete comming into the Haven at Angra in Tercera. But the winde was such, that for the space of foure dayes after, though wee lay as close by the winde as was possible, yet we could not come neere them. In this

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time we lost our late French Prize, not being able to lie so neere the winde as we, and heard no more of her till we came to England, where shee safely arrived.

Upon Munday we came very neere the Havens mouth, being minded to have runne in amongst them, and to have fetched out some of them if it had beene possible: But in the end this enterprise was deemed too daungerous, considering the strength of the place where they rode, being haled and towed in neerer the towne, at the first sight of our approching, and lying under the protection of the Castle of Brasill on the one side (having in it five and twentie peeces of Ordinance), and a fort on the other side, wherein were 13 or 14 great brasse pieces. Besides, when we came neere land, the winde proved too scant for us to attempt any such enterprise.

Upon Tuesday the fourteenth of October we sent our boate to the roade to sound the depth, to see if there were any anking place for us, where we might lie without shot of the Castle and Fort, and within shot of some of those shippes, that we might either make them come out to us, or sinke them where they lay. Our boate returned, having found out such a place as we desired, but the winde would not suffer us to come neere it, and againe if we could have ankored there, it was thought likely that they would rather runne themselves a ground to save their lives and liberties, and some of their goods, then come foorth to loose their liberties and goods to us their enemies. So we shot at them to see if we could reach them, but it fell farre short. And thus we departed, thinking it not probable that they would come foorth so long as we watched for them before the havens mouth, or within sight of them. For the space of five dayes after we put off to sea and lay without sight of them, and sent a pinnesse to lie out of sight close by the shore, to bring us word if they should come foorth. After a while the Pinnesse returned and tolde us that those

ships in the Haven had taken downe their sayles, and let downe their toppe mastes: so that wee supposed they would never come foorth till they perceived us to bee quite gone.

Wherefore upon the 20 of October, hearing that there were certaine Scottish ships at Saint Michael, we sayled thither, and found there one Scottish roader,¹ and two or three more at Villa Franca, the next road, a league or two from the towne of S. Michael to the Eastwards: of whom we had for our reliefe some small quantitie of wine (viz., some fivo or sixe buttes of them all) and some fresh water, but nothing sufficient to serve our turne.

Upon Tuesday, the one and twentieth of October, we sent our long boate to shore for fresh water at a brooke a little to the Westwards from Villa Franca.

But the Inhabitants espying us, came downe with two Ensignes displayed, and about some hundred and fiftie men armed, to withstand our landing.

So our men, having spent all their powder upon them in attempting to land, and not being able to prevaile at so great oddes, returned frustrate.

From hence we departed towards Saint Maries Island, minding to water there, and then to goo for the coast of Spaine. For we had intelligence that it was a place of no great force, and that we might water there very well: therefore upon Friday following, my Lord sent Captaine Lister, and Captaine Amias Preston, now Sir Amias Preston (who not long before came to us out of his owne shippe, and sheloosing us in the night, hee was forced to tarry still with us), with our long boate and Pinnesse, and some sixtie or seventie shotte in them, with a friendly letter to the Ilanders, that they would grant us leave to water, and we would no further trouble them.

¹ A *roader* is any ship that rides at anchor in a roadstead. The name is chiefly applied to those vessels that, working the tides, proceed from one road, or anchorage, to another.

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So we departed from the *Victorie* for the Iland, about nine of the clocke in the forenoone, and rowed freshly untill about three a clocke afternoone, at which time our men, being something weary with rowing, and being within a league or two of the shore and four or five leagues from the *Victorie*, they espied (to their refreshing) two shippes ryding at anker hard under the towne, whereupon, having shifted some six or seven of our men into Captaine Davis his boate, being too much pestered in our owne, and retayning with us some twenty shot in the pinnesse, we made way towards them with all the speedo we could.

By the way as we rowed we saw boates passing betwixt the roaders and the shore, and men in their shirtes swimming and wading to shoare, who, as we perceived afterwarde, were labouring to set those shippes fast on ground, and the Inhabitants as busily preparing themselves for the defence of those roaders, their Iland, and themselves. When we came neere them, Captaine Lister commaunded the Trumpets to be sounded, but prohibited any shot to be discharged at them untill they had direction from him. But some of the companie, either not well perceiving or regarding what he sayd, immediatly upon the sound of the Trumpets discharged their pieces at the Islanders, which for the most part lay in trenches and fortified places unseene, to their owne best advantage: who immediatly shot likewise at us, both with small and great shot, without danger to themselves. Notwithstanding, Captaine Lister earnestly hastened forward the Saylers that rowed, who beganne to shrink at that shot, flying so fast about their eares, and himselfe first entring one of the shippes that lay a litle further from shoare then the other, we spedily followed after him into her, still plying them with our shot. And having cut in sunder her Cables and Hausers, towed her away with our Pinnesse. In the meane time Captaine Davis his boate overtooke us and entred into the other shippe,

which also (as the former) was forsaken by all her men: but they were constrayned to leave her and to come againe into their boate (whilest shot and stones from shoare flew fast amongst them), finding her to sticke so fast a ground, that they could not stiro her: which the Townsmen also perceiving, and seeing that they were but fewe in number, and us (busied about the other ship) not comming to ayde them, were preparing to have come and taken them. But they returned unto us, and so together we came away towards the *Victory*, towing after us the Prize that we had now taken, which was lately come from Brasill loden with sugar.

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In this fight we had two men slaine and 16 wounded: and as for them, it is like they had litle hurt, lying for the most part behind stone walles, which were builded one above another hard by the sea side, upon the end of the hill, whereupon the Towne stode betwixt two valleyes. Upon the toppe of the hill lay their great Ordinance (such as they had), wherewith they shot leaden bullets, whereof one pierced through our Prizes side, and lay still in the shippe without doing any more harme.

The next day we went againe for water to the same Iland, but not knowing before the inconvenience and disadvantage of the place where we attempted to land, we returned frustrate.

The same night, the 25 of October, we departed for S. Georges Iland for fresh water, whither we came on Munday following, October 27, and having espied where a spout of water came running downe: the pinnesse and long boate were presently manned and sent under the conduct of Captaine Preston and Captaine Munson, by whom my Lord sent a letter to the Ilanders as before, to grant us leave to water onely, and we would no further trouble them; notwithstanding, our men comming on shoare found some of the poore Ilanders, which, for feare of us, hid themselves amongst the rockes.

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And on Wednesday following our boats returned with fresh water, whereof they brought only sixe tunnes for the *Victorie*, alleaging they could get no more, thinking (as it was supposed) that my Lord having no more provision of water and wine, but onely 12 tunnes, would not goe for the coast of Spaine, but straight for the coast of England, as many of our men greatly desired: notwithstanding, my Lord was unwilling so to doe, and was minded the next day to have taken in more water: but through roughnesse of the seas and winde, and unwillingnesse of his men, it was not done. Yet his Hon. purposed not to returne with so much provision unspent, and his voyage (as he thought) not yet performed in such sort as mought give some reasonable contentment or satisfaction to himselfe and others.

Therefore, because no more water could now conveniently be gotten, and being uncertaine when it could be gotten, and the time of our staying aboard also uncertaine, the matter being referred to the choyse of the whole companie, whither they would tarrie longer, till wee might be more sufficiently provided of fresh water, or goe by the coast of Spaine for England, with halfe so much allowance of drinke as before, they willingly agreed that every mease should bee allowed at one meale but halfe so much drinke as they were accustomed (except them that were sicke or wounded), and so to goe for England, taking the coast of Spaine in our way, to see if we could that way make up our voyage.

Upon Saturday, Octob. 31, we sent the *Margaret* (because she leaked much) directly for England, together with the Prizo of Brasile which we tooke at S. Marie, and in them some of our hurt and wounded men, or otherwise sicke, were sent home as they desired, for England: but Captaine Monson was taken out of the *Megge* into the *Victorie*.

So we held on our course for the coast of Spaine with a faire winde and a large, which before we seldome had.

And upon Tuesday following, being the 4 of Novemb.,

we espied a saile right before us, which we chased till about three a clocke in the afternoone, at which time we overtaking her, she stroke sayle, and being demanded who was her owner and from whence she was, they answered, a Portugall, and from Pernanbucke in Brasilo. She was a ship of some 110 tuns burden, freighted with 410 chestes of Sugar, and 50 Kintals¹ of Brasill-wood,² every Kintall contayning one hundred pound weight: we tooke her in latitude nine and twentie degrees, about two hundred leagues from Lisbone westwards: Captaine Preston was presently sent unto her, who brought the principall of her men aboard the *Victorie*, and certaine of our men, mariners and souldiers, were sent aboard her. The Portugals of this Prize told us that they saw another ship before them that day about noone. Having therefore dispatched all things about the Prize aforesaid, and left our long boat with Captaine Davis, taking his lesser boat with us, we made way after this other ship with all the sayles we could beare, holding on our course due East, and giving order to Captaine Davis, his ship and the Prize, that they should follow us due East, and that if they had sight of us the morning following, they should follow us still: if not, they should goe for England.

The next morning we espied not the sayle which we chased, and Captaine Davis his ship, and the Prize, were behinde us out of sight: but the next Thursday, the sixt of November (being in latitude 38 degrees 30 minutes, and about sixtie leagues from Lisbone westwards), early in the morning, Captaine Preston descried a sayle some two or three leagues a head of us, after which we presently

¹ A *kintal*, or *quintal*, was a commercial weight of about 100 lbs., more or less, according to the different usages of nations. It was, probably, so called because composed of five equal parts of twenty pounds.

² The Brazil-wood of commerce is a heavy reddish-coloured wood obtained from the *Cæsalpinia Brasiliensis*, belonging to the natural order of the *Leguminosæ*.

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hastened our chase, and overtooke her about eight or nine of the clocke before noono. She came lately from Saint Michaels roade, having beene before at Brasill loden with Sugar and Brasile.¹ Having sent our boat to them to bring some of the chiefe of their men aboard the *Victorie*, in the meane time, whilst they were in comming to us, one out of the maine toppe espied another saile a head some three or foure leagues from us. So, immediately upon the returne of our boato, having sent her backe againe with some of our men aboard the prize, we pursued speedily this new chase, with all the sayles we could packe on, and about two a clocke in the afternoone overtooke her: she had made provision to fight with us, having hanged the sides of the shippe so thicke with hides (wherewith especially she was loden), that musket shot could not have pearced them: but yer we had discharged two great pieces of our Ordinance at her, she stroke sayle, and approaching neerer, we asking of whence they were, they answered from the West-Indies, from Mexico, and Saint John de Lowe (truly called Ulhua).²

This ship was of some three or foure hundred tunnes, and had in her seven hundred hides worth tenne shillings a peece: sixe chests of Cochinell, every chest houlding one hundred pound weight, and every pound worth sixe and twentie shillings and eight pence, and certaine chests of Sugar and China dishes,³ with some plate and silvor.

The Captaine of her was an Italian, and by his behaviour seemed to be a grave, wise, and civill man: he had put in adventure in this shippe five and twentie thousand Duckats. Wee tooke him with certaine other of her chiefest men (which were Spaniards) into the *Victorie*: and Captaine Lister, with so manie other of the chiefest of our Mariners,

¹ *Brasil*, was a heavy red wood found in South America. See note on preceding page.

² St. Juan de Ulua, a fortified island in the harbour of Vera Cruz.

³ China ware.

souldiers, and saylers as were thought sufficient, to the number of 20 or thereabouts, were sent into her. In the meane time (we staying) our other prizes, which followed after, came up to us. And now wee had our hands full, and with joy shaped our course for England; for so it was thought meetest, having now so many Portugals, Spaniards, and Frenchmen amongst us, that if we should have taken any more prizes afterwards, wee had not bene well able to have manned them without endangering our selves.

So about six of the clocke in the afternoone (when our other prize had overtaken us), wee set saile for England. But our prizes not being able to beare us company without sparing them many of our sailes, which caused our ship to rowle and wallow, in such sort that it was not onely very troublesome to us, but, as it was thought, would also have put the maine Maste in danger of falling overboord: having acquainted them with these inconveniences, we gave them direction to keepe their courses together, folowing us, and so to come to Portsmouth. We tooke this last prize in the latitude of 39 degrees, and about 46 leagues to the Westwards from The Rocke.¹

She was one of those 16 ships which we saw going into the haven at Angra in Tercera, October 8. Some of the men that we tooke out of her, tolde us, that whilest wee were plying up and downe before that haven, as before was shewed, expecting the comning forth of those shippes, three of the greatest and best of them, at the appointment of the Governour of Tercera were unladen of their treasure and marchandizo.

And in every of them were put three hundred Souldiers, which were appointed to have come to lay the *Victory* aboard in the night, and take her; but when this should have bene done, the *Victory* was gone out of their sight.

¹ The Rock of Gibraltar.

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Now we went meerily before the winde with all the sailes we could beare, insomuch that in the space of 24 houres, we sailed neere 47 leagues, that is, sevenscore English miles, betwixt Friday at noone and Saturday at noone (notwithstanding the shippe was very foule and much growne, with long being at Sea), which caused some of our company to make accompt they would see what running at Tilt there should bee at Whitehall upon the Queenes day. Others were imagining what a Christmas they would keepe in England with their shares of the prizes we had taken.

But so it befell, that we kept a colde Christmas with the Bishop and his clearks¹ (rockes that lye to the Westwards from Sylly, and the Western parts of England): For soone after, the wind scanting came about to the Eastwards (the worst part of the heavens for us, from which the winde could blow) in such sort, that we could not fetch any part of England.

And hereupon, also, our allowanco of drinke, which was scant ynough before, was yet more scanted, because of the scarcitie thereof in the shippe. So that now a man was allowed but halfe a pinte at a meale, and that, many times, colde water, and scarce sweete. Notwithstanding, this was an happie estate in comparison of that which followed. For, from halfe a pinte, we came to a quarter, and that lasted not long neither, so that by reason of this great scarcitie of drinke, and contrarietie of winde, we thought to put into Ireland, there to relieve our wants.

The "Bishop and his clerks" are situated off the south-west end of the Scilly Islands, and consist of a rock and several ledges. On the Bishop Rock is a lighthouse, a noble granite structure, showing a brilliant, fixed, white light, 110 feet above high water-mark, and visible in clear weather a distance of sixteen miles. During thick or foggy weather a bell is sounded. The light was first used in 1858. It is in lat. 49° 52' 23" N. and long. 6° 26' 40" W. This lighthouse, being to the south-west of all the dangers around the Scilly Islands, when sighted, renders the approach to the group comparatively easy.

But when wee came neere thither, lying at hull¹ all night (tarrying for the daylight of the next morning, whereby we might the safelyer bring our ship into some convenient harbour there), we were driven so farre to lee-ward, that we could fetch no part of Ireland, so as with heaوية hearts and sad cheare, wee were constrained to returne backe againe, and expect till it should please God to send us a fairo winde either for England or Ireland. In the meane time, we were allowed every man three or foure spoones full of vinegar to drinke at a meale: for other drinke we had none, saving onely at two or three meales, when we had in stead hereof as much wine, which was wringed out of Wine-lees that remained.

EARL OF
CUMBER-
LAND'S
3RD VOYAGE

With this hard fare (for by reason of our great want of drinke, wee durst eate but very litle), wee continued for the space of a fourtnight or thereabouts: Saving that now and then wee feasted for it in the meane time: And that was when there fell any haile or raine: the haile-stones wee gathered up, and did eate them more pleasantly then if they had bene the sweetest Comfits in the world: The raine-drops were so carefully saved, that so neere as wee couldo, not one was lost in all our shippe. Some hanged up sheetes tied with cordes by the foure corners, and a weight in the midst that the water might runne downe thither, and so be received into some vessell set or hanged underneath: Some that wanted sheetes, hanged up nakins,² and cloutes, and watched them till they were thorow wet, then wringing and sucking out the water.

And that water which fell downe and washed away

¹ See note 1, page 28. Shakespeare also makes use of this expression in Act I, Scene 4, of the *Twelfth Night*:—

Maria.—"Will you hoist your sail, sir?

Here lies your way."

Viola.—"No, good swabber; I am to hull here

A little longer."

² Napkins, or handkerchiefs.

EARL OF
CUMBER-
LAND'S
3RD VOYAGE

the filth and soyling of the shippe, trod under foote, as bad as running downe the kennell many times when it raineth, was not lost, I warrant you, but watched and attended carefully (yea, sometimes with strife and contention) at every scupper-hole, and other place where it ranne downe, with dishes, pots, cannes, and Jarres, whereof some drunke hearty draughts even as it was, mud and all, without tarrying to clense or settle it: Others cleansed it first, but not often, for it was so thicke and went so slowly thorow, that they might ill endure to tary so long, and were loth to loose too much of such precious stuffe: some licked with their tongues (like dogges) the boards under feete, the sides, railles, and Masts of the shippe: others that were more ingenious, fastened girdles or ropes about the Mastes, dawbing tallow betwixt them and the Maste (that the raine might not runne downe betweene), in such sort, that those ropes or girdles hanging lower on the one side then on the other, a spout of leather was fastened to the lowest part of them, that all the raine drops that came running downe the Maste, might meeto together at that place, and there be received.

Hee that got a canne of water by these meanes was spoken of, sued to, and envied as a rich man. *Quàm pulchrum digito monstrari & dicier hic est?*¹

Some of the poore Spaniards that we had taken (who, notwithstanding, had the same allowance that our owne men had) would come and crave of us, for the love of God, but so much water as they could holde in the hollow of their hand; and they had it, notwithstanding our great extremitie, to teache them some humanitie in stead of their accustomed barbaritie, both to us and other nations heretofore. They put also bullets of lead into their mouthes to slake their thirst.

Now, in every corner of the shippe were heard the

¹ This may be rendered, literally, as—"How fine a thing it is to be pointed out by the finger, and to hear the buzz of, 'Here he comes!'"

lamentable cries of sicke and wounded men, sounding woefully in our eares, crying out, and pitifully complaining for want of drinke, being readie to die, yea many dying for lacke thereof, so as by reason of this great extremitie we lost many more men then wee had done all the voyage before: having before this time bene so well and sufficiently provided for, that we lived in maner as well and healthfully, and died as few as if wee had bene in England, whereas now lightly every day some were cast overboard.

But the second day of December, 1589, was a festivall day with us, for then it rained a good pace, and wee saved some pretie store of raine water (though wee were well wet for it, and that at midnight), and filled our skins full besides: notwithstanding it were muddie and bitter with washing the shippe, but (with some sugar, which we had to sweeten it withall) it went merrily downe; yet remembered we and wished for with all our hearts, many a Conduit, pumpe, spring, and streame of cleare sweete running water in England: And how miserable wee had accompted some poore soules whom we had scene driven for thirst to drinke thereof, and how happy we would now have thought our selves if we might have had our fills of the same: yet should wee have fared the better with this our poore feasting, if we might have had our meate and drinke (such and so much as it was) stand quietly before us: but, beside all the former extremities, wee were so tossed and turmoiled with such horrible stormie and tempestuous weather, that every man had best holde fast his Canne, cup, and dish in his hands, yea, and himselfe too, many times, by the ropes, railles, or sides of the ship, or else he should soone finde all under feete.

Herewith, our maine saile was torno from the yarde and blowne over boord quite away into the sea without recovery, and our other sailes so rent and torne (from side to side, some of them), that hardly any of them escaped hole. The

EARL OF
CUMBER-
LAND'S
3RD VOYAGE

the filth and soyling of the shippe, trod under foote, as bad as running downe the kennell many times when it raineth, was not lost, I warrant you, but watched and attended carefully (yea, sometimes with strife and contention) at every scupper-hole, and other place where it ranne downe, with dishes, pots, cannes, and Jarres, whereof some drunke hearty draughts even as it was, mud and all, without tarrying to clense or settle it: Others cleansed it first, but not often, for it was so thicke and went so slowly thorow, that they might ill endure to tary so long, and were loth to loose too much of such precious stuffe: some licked with their tongues (like dogges) the boards under foete, the sides, railes, and Masts of the shippe: others that were more ingenious, fastened girdles or ropes about the Mastes, dawbing tallow betwixt them and the Maste (that the raine might not runne downe betwene), in such sort, that those ropes or girdles hanging lower on the one side then on the other, a spout of leather was fastened to the lowest part of them, that all the raine drops that came running downe the Maste, might meete together at that place, and there be received.

Hec that got a canne of water by these meanes was spoken of, sued to, and envied as a rich man. *Quàm pulchrum digito monstrari & dicier hic est?*¹

Some of the poore Spaniards that we had taken (who, notwithstanding, had the same allowance that our owne men had) would come and crave of us, for the love of God, but so much water as they could holde in the hollow of their hand: and they had it, notwithstanding our great extremitie, to teache them some humanitie in stead of their accustomed barbaritie, both to us and other nations heretofore. They put also bullets of lead into their mouthes to slake their thirst.

Now, in every corner of the shippe were heard the

¹ This may be rendered, literally, as—"How fine a thing it is to be pointed out by the finger, and to hear the buzz of, 'Here he comes!'"

lamentable cries of sicke and wounded men, sounding woefully in our eares, crying out, and pitifully complaining for want of drinke, being readie to die, yea many dying for lacke thereof, so as by reason of this great extremitie we lost many more men then wee had done all the voyage before: having before this time bene so well and sufficiently provided for, that we lived in maner as well and healthfully, and died as few as if wee had bene in England, whereas now lightly every day some were cast overboard.

EARL OF
SUMMER-
LAND'S
3RD VOYAGE

But the second day of December, 1589, was a festivall day with us, for then it rained a good paece, and wee saved some pretie store of raine water (though wee were well wet for it, and that at midnight), and filled our skins full besides: notwithstanding it were muddie and bitter with washing the shippe, but (with some sugar, which we had to sweeten it withall) it went merrily downe; yet remembered we and wished for with all our hearts, many a Conduit, pumpe, spring, and streame of cleare sweete running water in England: And how miserable wee had accopted some poore soules whom we had scened driven for thirst to drinke thereof, and how happy we would now have thought our selves if we might have had our fills of the same: yet should wee have fared the better with this our poore feasting, if we might have had our meate and drinke (such and so much as it was) stand quietly before us: but, beside all the former extremities, wee were so tossed and turmoiled with such horrible stormie and tempestuous weather, that every man had best holde fast his Canno, cup, and dish in his hands, yea, and himselfe too, many times, by the ropes, railes, or sides of the ship, or else he should soone finde all under feete.

Herewith, our maine saile was torne from the yarde and blowne over boord quite away into the sea without recovery, and our other sailes so rent and torne (from side to side, some of them), that hardly any of them escaped hole. The

EARL OF
CUMBER-
LAND'S
3RD VOYAGE

raging waves and foming surges of the sea came rowling like mountaines one after another, and overraked the waste of the shippe like a mightie river running over it; whereas, in faire weather, it was neere 20 foote above the water, that now we might cry out with the princely Prophot, Psalme 107, vers. 26. They mount up to heaven, and descend to the deepe, so that their soule melteth away for trouble: they reele too and fro, and stagger like a drunken man, and all their cunning is gone.

With this extremitie of foule woather, the ship was so tossed and shaken, that by the cracking noise it made, and by the leaking which was now much more than ordinary, wee were in great feare it would have shaken in sunder, so that now also we had just cause to pray a litle otherwise then the Poet, though marring the Verse, yet mending the meaning.

*Deus maris & Cœli, quid enim nisi vota supersunt,
Solvere quassatæ parcito membra ratis.*¹

Notwithstanding, it pleased God of his great goodnesse to deliver us out of this danger. Then, forthwith a new maine sailo was made and fastened to the yard, and the rest repaired, as time and place would suffer: which we had no sooner done, but yet againe wee were troubled with as great extremitie as before, so that againe we were like to have lost our new maine saile, had not Master William Antony, the Master of the ship, himselfe (when none else would or durst) ventured, with danger of drowning, by creeping along upon the maine yarde (which was let downe close to the railles) to gather it up out of the sea, and to fasten it thereto, being in the meane while oft-times ducked over head and eares into the sea.

These stormes were so terrible, that there were some. in

¹ Which may be translated as follows:—

“God of sea and sky, we pray (for what can now avail but prayer?), we pray thee, refrain to loosen the ribs of our tempest-tossed bark!”

our company, which confessed they had gone to seas for the space of 20 yeeres, and had never seene the like, and vowed that if ever they returned safe home, they would never come to Sea againe.

EARL OF
CUMBER-
LAND'S
3RD VOYAGE

The last of November, at night, we met with an English ship, out of which (because it was too late that night) it was agreed that we should have had the next morning two or three Tunnes of wine, which, as they said, was al the provision of drink they had, save only a But or two, which they must needs reserve for their owne use: but after that, we heard of them no more, till they were set on ground upon the coast of Ireland, where it appeared that they might have spared us much more then they pretended they could, so as they might wel have relieved our great necessities, and have had sufficient for themselves besides, to bring them into England.

The first of December, at night, we spake with another English ship, and had some beere out of her, but not sufficient to carry us into England, so that wee were constrained to put into Ireland, the winde so serving.

The next day we came to an anker, not far from the S. Kelmes, under the land and winde, where we were somewhat more quiet, but (that being no safe harbour to ride in) the next morning wee went about to weigh anker, but having some of our men hurt at the Capsten, wee were faine to give over and leave it behinde, holding on our course to Ventre haven,¹ where wee safely arrived the same day, that place being a very safe and convenient harbor for us, that now wee might sing, as we had just cause: They that goe downe to the sea, &c.

So soone as we had ankered here, my Lord went forthwith to shoare, and brought presently fresh water and fresh victuals, as Muttons, pigges, hennes, &c., to refresh his company withall. Notwithstanding himselfe had lately

¹ Ventry harbour, on the north side of Dingle Bay.

EARL OF
CUMBER-
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3RD VOYAGE

bene very weake, and tasted of the same extremitie that his Company did: For, in the time of our former want, having a little fresh water left him remaining in a pot, in the night it was broken, and the water drunke and dried up.

Soone after, the sicke and wounded men were carried to the next principall Towne, called Dingenacush,¹ being about three miles distant from the foresaide haven, where our shippe roade, to the Eastwards, that there they might be the better refreshed, and had the Chirurgians dayly to attend upon them. Here we wel refreshed our selves, whilst the Irish harpe sounded sweetely in our eares, and here we, who for the former extremities were in maner halfe dead, had our lives (as it were) restored unto us againe.

This Dingenacush is the chiefe Towne in al that part of Ireland, it cōsisteth but of one maine streete, from whence some smaller doe proccede on either side. It hath had gates (as it seemeth), in times past, at either ende to open and shut as a Towne of warre, and a Castle also. The houses are very strongly built with thicke stone walles, and narrow windowes like unto Castles: for, as they confessed, in time of trouble, by reason of the wilde Irish or otherwise, they used their houses for their defence as Castles. The Castle and all the houses in the Towne, save foure, were won, burnt, and ruinated by the Erle of Desmond.²

¹ Probably the present town of Dingle, or Milltown.

² Geron FitzGerald, sixteenth Earl of Desmond, was the owner of enormous estates. His property was said to exceed 600,000 acres (English measure), and was equal, in extent, to four counties. He sat in the Parliament held at Dublin in January 1559. Of a restless and ambitious character, he rose in rebellion, but, although nobly supported by his clan the Geraldines, he was eventually surprised and killed in his bed. His head was sent by the Earl of Ormond to Queen Elizabeth, who caused it to be fixed on London Bridge, as a warning to all rebels and traitors.

The head of the family, the Earl of Kildare, died in the Tower the following year.

Geron's son, James, the seventeenth Earl, was born in England, and was the godson of Queen Elizabeth.

These foure houses fortified themselves against him, and withstood him and all his power perforce, so as he could not winne them.

EARL OF
CUMBER-
LAND'S
3RD VOYAGE

There remaineth yet a thicke stone wall that passeth overthwart the midst of the streete which was a part of their fortification. Notwithstanding whilst they thus defended themselves, as some of them yet alive confessed, they were driven to as great extremities as the Jewes, besieged by Titus, the Romane Emperour, insomuch that they were constrained to eat dead mens carcases for hunger. The Towne is now againe somewhat repaired, but in effect there remaine but the ruines of the former Towne. Commonly, they have no chimneis in their houses, excepting them of the better sort, so that the smoake was very troublesom to us, while we continued there. There fowell is turfes, which they have very good, and whinnes or furies. There groweth little wood thereabouts, which maketh building chargeable there: as also want of lime (as they reported), which they are faine to fetch from farre, when they have neede thereof.

But of stones there is store ynough, so that with them they commonly make their hedges to part ech mans ground from other; and the ground seemeth to be nothing else within but rockes and stones; Yet it is very fruitfull and plentifull of grasse, and graine, as may appeare by the abundance of kine and cattel there: insomuch that we had good muttons (though somewhat lesse then ours in England) for two shillings or five groates a piece, good pigges and hennes for 3 pence a piece.

The greatest want is industrious, painefull, and husbandly inhabitants to till and trimme the ground: for the common sort, if they can provide sufficient to serve from hand to mouth, take no further care.

Of money (as it seemeth) there is very small store amongst them, which perhaps was the cause that made

EARL OF
CUMBER-
LAND'S
3RD VOYAGE

them double and triple the prizes of many things we bought of them, more then they were before our comming thither.

Mines in
Ireland.

Good land was here to be had for foure pence the Acre, yeerely rent. There are Mines of Alome, Tinne, brasse, and yron. Stones wee sawe there as cleare as Christall, naturally squared like Diamonds.

That part of the Countrey is all ful of great mountaines and hills, from whence came running downe the pleasant streames of sweete fresh running water. The naturall hardnesse of that Nation appeareth in this, that their small children runne usually in the middest of Winter up and downe the streetes bare-foote and bare-legged, with no other apparell (many times), save onely a mantell to cover their nakednesse.

The chiefe officer of their Towne they call their Sovereigne, who hath the same office and authoritic among them that our Maiors have with us in England, and hath his Sergeants to attend upon him, and beare the Mace before him as our Maiors.

We were first intertaind at the Sovereignes house, which was one of those 4 that withstood the Erle of Desmond in his rebellion. They have the same forme of Common prayer, word for word, in Latin, that we have here in England. Upon the Sunday, the Sovereigne commeth into the Church with his Sergeant before him, and the Sheriffe and others of the Towne accompany him, and there they kneele downe, every man by himselfe privately, to make his prayers. After this, they rise and go out of the Church againe to drinke, which being done, they returne againe into the Church, and then the Minister beginneth prayers.

Their maner of baptizing differeth something from ours: part of the service belonging thereto is repeated in Latin, and part in Irish. The Minister taketh the child in his hands, and first dippeth it backwards, and then forwards,

over head and eares into the cold water in the midst of Winter, whereby also may appeare their naturall hardnesse (as before was specified).

EARL OF
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LAND'S
3RD VOYAGE

They had neither Bell, drum, nor trumpet, to call the Parishioners together, but they expect till their Sovereigne came, and then they that have any devotion follow him.

They make their bread all in cakes, and, for the tenth part, the bakers bake for all the towne.

We had of them some 10 or 11 Tunnes of beere for the *Victory*; but it proved like a present purgation to them that tooke it, so that we chose rather to drinke water then it.

The 20th of December we loosed frō hence, having well provided our selves of fresh water, and other things necessary, being accompanied with sir Edw. Dennie, his Lady, and two yong sonnes.

This day, in the morning, my Lord going ashoare to dispatch away speedily some fresh water that remained for the *Victory*, the winde being very faire for us, brought us newes that there were 60 Spanish prizes taken and brought to England. For two or thre dayes wee had a faire winde; but afterwards it scanted so, that (as I said before) we were faine to keepe a cold Christmas with The Bishop and his clarkes.

After this, we met with an English ship, that brought us joyful newes of 91 Spanish prizes that were come to England: and sorrowfull newes withall, that the last and best prize we tooke had suffered shipwracke at a place upon the coast of Cornwal, which the Cornish men cal Als Elferne, that is, Iel-cliffe, and that Captaine Lister and all the men in the ship were drowned, save 5 or 6, the one halfe English, the other Spanish, that saved themselves with swimming: but, notwithstanding much of the goods were saved, and reserved for us, by sir Francis Godolphin, and the worshipful gentlemen of the Countrey there. My Lord

Captaine
Lister
drowned.

EARL OF
CUMBER-
LAND'S
3RD VOYAGE

was very sorry for Captaine Lister's death, wishing that he had lost his voyage to have saved his life.

The 29 of December we met with another shippe, that tolde us the samo newes, and that sir Martin Frobisher, and Captaine Reymond had taken the Admirall and Vice-Admirall of the Fleet that we espied going to Tercera haven. But the Admiral was sunke with much leaking, neere to the Idy Stone,¹ a rocke that lieth over against Plimouth sound, and the men were saved.

This ship also certified us that Captain Prestons ship had taken a prize loden with silver. My Lord entred presently into this, and went to Falmouth, and we held on our course for Plimouth. At night, wee came neere to the Ram-head² (the next Cape Westwards from Plimouth sound), but we were afraid to double it in the night, misdoubting the scantnesse of the winde. So we stood off to Sea halfe the night, and towards morning had the winde more large, and made too little spare thereof, that partly for this cause, and partly through mistaking of the land, wee were driven so much to lee-wards, that we could not double that Cape: Therefore, we returned backe againe, and came into Falmouth haven, where wee strucke on ground in 17 foote water: but it was a low ebbe, and ready againe to flowe, and the ground soft, so as no hurt was done. Here, with gladnesse, wee set foote againe upon the English ground (long desired) and refreshed our selves with keeping part of Christmas upon our native soile.

¹ The Eddystone.

² Rame-head is the extreme point of the promontory forming the western boundary of Plymouth Sound.

The last voyage of the worshipfull M. Thomas Candish, esquire, intended for the South sea, the Philippinas, and the coast of China, with 3 tall ships and two barks.

Written by M. John Jane, a man of good observation, imployed in the same, and many other voyages.¹

THE 26 of August, 1591, wee departed from Plimmouth with 3 tall ships and two barks, the *Galcon*, wherein M. Candish went himselfe, being Admirall; The *Rorbucke*, vice admirall, whereof M. Coeke was Captaine; The *Desire*, Rere-admirall, whereof was Captaine M. Iohn Davis (with whom, and for whose sake, I went this voyage); The *Black pinnesse*,² and a barke of M. Adrian Gilbert³ whereof M. Randolfe Cotton was Captaine.

The 29th of November wee fell with the bay of Salvador⁴ upon the coast of Brasil, 12 leagues on this side Cabo Frio, where wee were becalmed untill the second of December: at which time wee tooke a small barke bound for the River of Plate with sugar, haberdash wares, and Negros. The Master of this barke brought us unto an yle called Placencia,⁵ thirtie leagues West from Cabo Frio, where wee arrived the fift of December, and rifled sixe or seven houses inhabited by Portugales.

The 11, wee departed from this place, and the fourteenth we arrived at the yle of S. Sebastian: from

Baye de Salvador.

A barke taken.

Cabo Frio.
Ish. de Placencia.

Ish. de S. Sebastian.

¹ The account of this voyage is taken from the third volume of Hakluyt, Edition 1600.

² Commanded by Captain Tobie.

³ The *Daintie*.

⁴ St. Salvador or Campos, in 21° 43' S. latitude. This is not to be confounded with St. Salvador or Bahia, further north.

⁵ In all probability Isha Grande.

CANDISH'S
2ND VOYAGE
TO THE
SOUTH SEA.

whence M. Cocke and Captaine Davis presently departed with The *Desire* and the blacke pinnesse, for the taking of the towne of Santos.¹ The 15, at evening, we anckered at the barre of Santos, from whence we departed with our boates to the towne; and the next morning, about nine of the clocke, wee came to Santos, where, being discovered, wee were inforced to land with 24 gentlemen, our long boate being farre a sterne, by which expedition wee tooke all the people of the towne at Masse, both men and women, whom wee kept all that day in the Church as prisoners. The cause why master Candish desired to take this towne, was to supply his great wants: For, being in Santos, and having it in quiet possession, wee stood in assurance to supply all our needes in great abundance. But such was the negligence of our governour, master Cocke, that the Indians were suffered to carry out of the towne whatsoever they would in open viewe, and no man did controll them: and the next day, after wee had wonne the towne, our prisoners were all set at libertie, onely foure poore olde men were kept as pawnes to supply our wants. Thus, in three dayes, the towne that was able to furnish such another Fleete with all kinde of necessaries, was left unto us nakedly bare, without people and provision.

The towne
of Santos
taken.

Eight or tenne dayes after, master Candish himselfe came thither, where hee remained untill the 22 of January, seeking by intreatie to have that whereof we were once possessed. But, in conclusion, wee departed out of the towne through extreeme want of victuall, not being able any longer to live there, and were glad to receive a fewe canisters or baskets of Cassavi meale;² so that in every con-

¹ Santos is situated to the westward of Rio de Janeiro, in 23° 56' S. lat.

² The Mandioc plant (*Manihot utilissima*), a Euphorbiacæ. The root of this shrub is full of venomous juice, which is a deadly poison. The mode of preparation is to rasp the roots, then bruise the pulp, and wash thoroughly. In this way, the venom is washed out, and the residue becomes Cassava. The powder which floats off in the water is a pure starch, which, when allowed to settle, becomes Tapioca.

dition wee wont worse furnished from the towne, then when
wee came unto it.

CANDISH'S
2ND VOYAGE
TO THE
SOUTH SEA.

The 22 of January, we departed from Santos, and burnt
Sant Vincent to the ground. The 24, we set saile, shaping
our course for the Streights of Magellan.

The towne
of S. Vin-
cent
burned.

The seventh of February, we had a very great storme,
and the eighth our Fleet was separated by the fury of the
tempest. Then our Captaine called unto him the Master
of our ship, whom hee found to be a very honest and suffi-
cient man, and conferring with him, he concluded to goo
for Port Desire,¹ which is in the Southerly latitude of 48
degrees; hoping that the Generall would come thithor, be-
cause that in his first voyage he had found great reliefe
there. For our Captaine could never get any direction
what course to take in any such extremities, though many
times hee had intreated for it, as often I have heard him
with grieve report. In sayling to this port, by good chance
we met with The *Roe-bucke*, wherein master Cocke had en-
dured great extremities, and had lost his boate, and there-
fore desired our Captaine to keepe him company, for hee
was in very desperate case. Our Captaine hoised out his
boate, and went aboard him to know his estate, and return-
ing tolde us the hardnesse thereof, and desired the Master
and all the company to be carefull in all their watches not
to loose The *Roe-bucke*, and so wee both arrived at Port
Desire the sixth of March.

They arrive
at Port
Desire.

The 16 of March, The *Blacke Pinnesse* came unto us, but
master Gilbert's barko came not, but returned home to
England, having their Captaine aboard the *Roe-bucke* with-
out any provision more then the apparell that hee wore,
who came from thence aboard our ship to remaine with

M. Adrian
Gilberts
barko re-
turneth for
England.

¹ Port Desire is on the east coast of Patagonia, situated between the
forty-seventh and forty-eighth parallels of latitude. It was at this place
that Captain Doughty was executed by order of Sir Francis Drake, for
inciting the company to mutiny.

CANDISH'S
2ND VOYAGE
TO THE
SOUTH SEA.

A pinnesse
built at
Santos.

They fall
with the
Streights of
Magellan.

our Captaine, by reason of the great friendship betweene them. The 18, the *Galeon* came into the road, and master Candish came into the harborough in a boat which he had made at sea; for his long boat and light-horseman¹ were lost at sea, as also a pinnesse which he had built at Santos: and being aboard *The Desire*, he tolde our Captaine of all his extremities, and spake most hardly of his company, and of divers gentlemen that were with him, purposing no more to goe aboard his owne ship, but to stay in *The Desire*. We all sorrowed to heare such hard speeches of our good friends; but having spoken with the gentlemen of the *Galeon*, wee found them faithfull, honest, and resolute in proceeding, although it pleased our Generall otherwise to conceive of them.

The 20 of March, we departed from Port Desire, master Candish being in *The Desire* with us. The eighth of April, 1592, wee fell with the Streights of Magellan, induring many furious stormes betweene Port Desire and the Streight. The 14, we passed through the first Streight. The 16, we passed the second Streight, being ten leagues distant from the first.

The 18, we doubled Cape Froward,² which Cape lieth in 53 degrees and $\frac{1}{2}$.

The 21, wee were inforced by the fury of the weather to put into a small coove with our ships, 4 leagues from the said Cape, upon the South shoare, where wee remained until the 15 of May. In the which time, wee indured extreeme stormes, with perpetual snow, where many of our men died with cursed famine, and miserable cold, not having wherewith to cover their bodies, nor to fill their bellies, but

¹ A "light horseman" was a fast-pulling boat, similar to the modern gig.

² Cape Froward is in 53° 53' S. latitude. It is situated half-way through the Strait of Magellan, and is the southern extreme of South America.

living by muskles,¹ water, and weeds of the sea, with a small reliefe of the ships store in meale sometimes. And all the sicke men in the *Galeon* were most uncharitably put a shore into the woods in the snowe, raine, and cold, when men of good health could skarcely indure it, where they ended their lives in the highest degree of misery, master Candish all this while being aboard *The Desire*.² In these great extremities of snow and cold, doubting what the ende would be, he asked our Captaines opinion, because he was a man that had good experience of the Northwest parts, in his 3 severall discoveries that way, imployed by the marchants of London. Our Captaine tolde him that this snowe was a matter of no long continuance, and gave him sufficient reason for it, and that thereby hee could not much be prejudiced or hindered in his proceeding. Notwithstanding, he called together all the company, and tolde them that he purposed not to stay in the Streights, but to depart upon some other voyage, or else to returne againe for Brasil. But his resolution was to goe for the Cape of

CANDISH'S
2ND VOYAGE
TO THE
SOUTH SEA.

¹ Mussels.

² A very graphic, but, I fear, unreliable, account of the adventures of Master Antonie Knivet, who alone survived this barbarous treatment, will be found in the fourth part of *Purchas his Pilgrimes*, page 1201, Edition 1625. At page 1193 of the same volume will be found Caven- dish's own account of the extremities his men were reduced to, in the following words:—

“And after that the moneth of May was come in, nothing but such flights of Snow, and extremities of Frost, as in all the time of my life, I never saw any to be compared with them. This extremitie caused the weake men (in my ship onely) to decay; for in seven or eight dayes, in this extremitie there dyed fortie men and sickened seventie, so that there were not fiftie men that were able to stand upon the hatches. I finding this miserable calamitie to fall upon me, and found that besides the decay of my men, and expence of my victuall, the snow and frost decayed our sailes and tackle, and the contagiousnesse of the place to bee such, for extremitie of frost and snow, as there was no longer staying, without the utter ruine of us all.”

CANDISH'S
2ND VOYAGE
TO THE
SOUTH SEA.

Buena Esperança.¹ The company answered, that if it pleased him, they did desire to stay Gods favour for a wiude, and to indure all hardnesse whatsoever, rather then to give over the voyage, considering they had bene here but a smal time, and because they were within fourtio leagues of the South sea, it grieved them now to returne; notwithstanding, what hee purposed, that they would performe.

So hee concluded to goe for the Cape of Buena Esperança, and to give over this voyage. Then our Captaine, after master Candish was come aboard *The Desire* from talking with the company, tolde him, that if it pleased him to consider the great extremitie of his estate, the slendernesse of his provisions, with the weakenesso of his men, it was no course for him to proceed in that newe enterprize: for if the rest of your shippes (said hee) bee furnished answerable to this, it is impossible to performe your determination: for wee have no more sailes then mastes, no victuals, no ground-tackling, no cordage more then is overhead, and among seventie and five persons, there is but the Master alone that can order the shippe, and but foureteene saylers. The rest are gentlemen, serving men, and artificers. Therefore, it will be a desperate case to take so hard an enterprize in hand. These persuasions did our Captaine not onely use to master Candish, but also to master Cocke.² In fine, upon a petition delivered in writing by the chiefe of the whole company, the Generall determined to depart out of The Streights of Magellan, and to returne againe for Santos in Brasil.³

¹ The Cape of Good Hope.

² The captain of the *Reckuck*.

³ According to Cavendish, this petition, or "humble supplication", was as follows:—

"That first they protested, to spend their lives most willingly for my sake, and that their love was such to me, as their chiefest care was for mee, and they grieved very much to see mee put on a resolution which

So the 15 of May wee set saile, the Generall then being in the *Galeon*. The eighteenth wee were free of the Streights, but at Cape Froward it was our hard hap to have our boat sunke at our sterne in the night, and to be split and sore spoiled, and to loose all our ores.

CANDISH'S
2ND VOYAGE
TO THE
SOUTH SEA.

They re-
turne from
the
Streights of
Magellan.

The twentieth of May being thwart of Port Desire, in the night the Generall altered his course, as we suppose, by which occasion wee lost him: for in the evening he stood close by a winde to seaward, having the winde at North-northeast,¹ and wee standing the same way, the winde not altering, could not the next day see him: so that we then persuaded our selves that hee was gone for Port Desire to relieve himselfe, or that hee had sustained some mischance at Sea, and was gone thither to remedy it.² Whereupon

The occa-
sion of
losing the
Generall.

(as they supposed) would be the end of my life, which was their greatest griefe. And next their owne lives, would immediately follow, both by reason of the length of the course, all which they must performe without reliefe. And further we had not left foure moneths victualls which might very well be spent in running a course not halfe so long. But if it would please me to returne againe for the coast of Brasile (where they knew my force being together, was able to take any place), there we might both provide victuall to returne againe, and furnish our selves of all other such wants as these extremities had brought upon us, and at a seasonable time returne againe, and so performe our first intentions."

Cavendish sums up by saying that it was at last agreed "to goe backe againe for that most wicked coast of Brasile",—an event, as he says, that "they so much seemed to desire and I so much hated,"—Purchas, part iv, p. 1192.

¹ The ships, being "closed-hauled", would therefore be steering nearly a due east course.

² The separation of the ships is thus alluded to by Cavendish: "In the latitude of fortie seven, in which place Davis in the *Desire*, and my *Pinnasse*, lost me in the night, after which time I never heard of them, but (as I since understood) Davis, his intention was ever to run away". He goes on to say: "The ships being parted from us, wee little suspecting any treacherie, the *Roebucke* and my selfe helde our course for Brasile". He attributes his subsequent misfortunes entirely to the supposed desertion of Davis and the little pinnace, for he says—"had not these two small ships parted from us, we would not have mis-carried on the coast of Brasile; for the only decay of us was that we could not get

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2ND VOYAGE
TO THE
SOUTH SEA.

our Capitaine called the Generals men unto him, with the rest, and asked their opinion what was to beo done. Every one sayde, that they thought that the Generall was gone for Port Desire. Then the Master, being the Generals man, and carefull of his masters service, as also of good judgement in Sea-matters, tolde the company howe dangerous it was to goe for Port Desire, if wee shoulde there misse the Generall: for (saide hee) wee have no boate to lande our selves, nor any cables nor anckers that I dare trust in so quicke stroames as are there: yet in all likelyhood, concluding that the Generall was gone thither, wee stayed our course for Port Desire, and by chance motto with the *Black pinnesse*, which had likewise lost the Fleete, being in very miserable case: so wee both concluded to seeke the Generall at Port Desire.

They come
again to
Port Desire
the 26 of
May.

A quiet
road.

A poole of
fresh water
on the South
side of Port
Desire.

The sixe and twentieth day of May we came to Port Desire, where not finding our Generall, as we hoped, being most slenderly victualled, without sailes, boate, ores, nailes, cordage, and all other necessaries for our reliefe, wee were strooken into a deadly sorrow. But referring all to the providence and fatherly protection of the Almighty, wee entered the harbour, and by Gods favour found a place of quiet roade, which before wee knewe not. Having moored our shippe with the pinnesses boate wee landed upon the South shore, where wee found a standing poole of fresh water, which by estimation might holde some tenne tunnes, whereby wee were greatly comforted. From this poole wee fet more then fortie tunnes of water, and yet we left the

into their barred harbours",—the *Leicester* and *Roebuck* drawing too much water to enable them to cross the bars of the rivers, into which they would otherwise have entered for provisions, water, and other necessaries.

After enduring great hardships, and suffering the loss of a great number of men who were killed by the Portuguese and Indians, Cavendish died of a broken heart on the homeward voyage, and was buried at sea. His letter was brought to England, and published by Purchas in his *Pilgrimes*.

poole as full as wee found it. And because at our first being in this harbour wee were at this place and found no water, we persuaded our selves that God had sent it for our reliefe. Also there were such extraordinary low ebbes as we had never seene, whereby wee got muskles in great plentie. Likewise God sent about our shippes great abundance of smelts, so that with hookes made of pinnes every man caught as many as hee could eate: by which meanes wee preserved our ship's victuals, and spent not any during the time of our abode here.

CANDISH'S
2ND VOYAGE
TO THE
SOUTH SEA.

Abundance
of muskles
and smelts.

Our Captaine and Master falling into the consideration of our estate and dispatch to goe to the Generall, found our wants so great, as that in a moneth wee could not fitte our shippe to set saile. For wee must needes set up a Smiths forge, to make boltes, spikes, and nayles, besides the repairing of our other wants. Whereupon they concluded it to bee their best course to take the pinnesse, and to furnish her with the best of the company, and to goe to the Generall with all expedition, leaving the shippe and the rest of the company untill the Generals returne; for hee had vowed to our Captaine that hee would returne againe for the Streights, as hee had tolde us. The Captaine and Master of the pinnesse, being the Generals men, were well contented with the motion.

But the Generall having in our shippe two most pestilent fellowes, when they heard of this determination, they utterly misliked it, and in secret dealt with the company of both shippes, vehemently persuading them that our Captaine and Master would leave them in the countrey to bee devoured of the Canibals, and that they were mercilesse and without charitie: whereupon the whole company joyned in secret with them in a night to murder our Captaine and Master, with my selfe, and all those which they thought were their friendes. There were markes taken in his caben howe to kill him with muskets through the shippes side,

A dangerous
mutiny.

CANDISH'S
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TO THE
SOUTH SEA.

and bullets made of silver¹ for the execution, if their other purposes should faile. All agreed hereunto, except it were the bote-swaine of our shippe, who, when hee knewe the matter, and the slender ground thereof, reveiled it unto our Master, and so to the Captaine. Then the matter being called in question, those two most murtherous fellows were found out, whose names were Charles Parker and Edward Smith.

The Captaine being thus hardly beset, in perill of famine, and in danger of murthering, was constrained to use lenitie, and by courteous meanes to pacifie this furie: shewing that to doe the Generall service, unto whom he had vowed faith in this action, was the cause why hee purposed to goe unto him in the pinnesse, considering that the pinnesse was so necessary a thing for him, as that hee could not bee without her, because hee was fearefull of the shore in so great shippes. Whereupon all cried out with cursing and swearing, that the pinnesse should not goe unlesse the shippe went. Then the Captaine desired them to shewo themselves Christians, and not so blasphemously to behave themselves, without regard or thankesgiving to God for their great deliverance and present sustenance bestowed upon them, alleaging many examples of Gods sharpe punishment for such ingratitude; and withall promised to doe any thing that might stand with their good liking. By which gentle speeches the matter was pacified, and the Captaine and Master, at the request of the company, were content to forgive this great treachery of Parker and Smith, who, after many admonitions, concluded in these wordes:

¹ It was thought by the superstitious that some people bore enchanted lives, which were proof against everything but a silver bullet. In later days, Claverhouse, according to Sir Walter Scott, was killed on the field of Killicerankie by his own waiting-man Mackay, who had loaded his piece with a silver button which he had cut off his own coat. It was believed by the Covenanters that Claverhouse had obtained from the Devil a charm against leaden bullets.

The Lord judge betweene you and mee : which after came to a most sharpe revenge even by the punishment of the Almighty.¹ Thus by a generall consent, it was concluded not to depart, but there to stay for the Generall's returne. Then our Captaine and Master, seeing that they could not doe the Generall that service which they desired, made a motion to the companie that they would lay downe under their handes the losing of the Generall, with the extremities wherein we then stode : whereunto they consented, and wrote under their handes as followeth.

CANDISH'S
2ND VOYAGE
TO THE
SOUTH SEA.

The testimoniall of the companie of "The Desire" touching their losing of their Generall, which appeareth to have bene utterly against their meanings.

The 26 of August 1591 wee whose names bee here under written, with divers others departed from Plimmouth under M. Thomas Candish, our Generall, with 4 ships of his, to wit, *The Galeon*, *The Robuck*, *The Desire*, and *The Blacke pinnesse*,¹ for the performance of a voyage into The South sea. The 19 of November we fell with the bay of Salvador, in Brasil. The 16 of December we tooke the towne of Santos, hoping there to revictuall our selves, but it fell not out to our contentment. The 24 of January we sot saile from Santos, shaping our course for The Streights of Magellan. The 8 of Februarie by violent stormes the sayde fleete was parted : *The Robuck* and *The Desire* arrived in Porto Desire the 6 of March. The 16 of March the *Blacke pinnesse* arrived there also : and the 18 of the same our admirall came into the roade : with whom we departed the 20 of March in poore and weako estate. The 8 of Aprill 1592 we entred The Streights of Magellan. The 21 of Aprill wee ankered beyond Cape Froward, within 40 leagues

¹ As will be seen at page 120.

² Through inadvertence, or other cause, the name of Adrian Gilbert's bark, the *Daintie*, is here omitted.

CANDISH'S
2ND VOYAGE
TO THE
SOUTH SEA.

of The South sea, where wee rode untill the 15 of May. In which time wee had great store of snowe, with some gustie weather, the wind continuing still at Westnorthwest against us. In this time wee were inforced, for the preserving of our victuals, to live the most part upon muskles, our provision was so slender; so that many of our men died in this hard extremitie. Then our General returned for Brasil, thero to winter, and to procure victuals for this voyage against the next yeere. So we departed The Streights the 15 of May. Tho 21 being thwart of Port Desire, 30 leagues off the shoare, the wind then at North-east and by North, at five of the clock at night lying North-east, wee suddenly cast about lying South-east and by South, and sometimes Southeast:¹ the whole fleete following the admirall, our ship comming under his lee, shot ahead him, and so framed saile fit to keepe companie. This night wee were severed, by what occasion wee protest wee know not, whither we lost them or they us. In the morning we only saw The *Black pinnesse*, then supposing that the admirall had overshot us. All this day wee stooode to the Eastwards, hoping to find him, because it was not likely that he would stand to the shoare againe so suddenly. But missing him towards night, we stood to the shoare-

The manner
how they
lost their
Generall.

¹ It is difficult to reconcile this statement with that made at page 99, where it is distinctly recorded that the admirall "stood close by a winde to sea-ward". In this account the ships are made to sail within one point of the wind, which is an utter impossibility. They are then said to have "cast about", and sailed to the south-east, an objectless manœuvre, as it would be taking them, *with a fair wind*, exactly in the opposite direction to that in which they wanted to proceed.

My impression is, that the ships of the squadron were steering about north-west, and that in the evening, not wishing to get too close to the land during the night, they tacked and stood to the eastward. That they separated during the night is, however, quite evident from both statements, although one leads us to suppose that the *Blacke Pinnesse* was accidentally fallen in with by Davis on his way to Port Desire, whilst the other infers that she was in sight at daylight the following morning.

ward, hoping by that course to finde him. The 22 of May at night we had a violent storme, with the winde at Northwest, and wee were inforced to hull,¹ not being able to beare saile, and this night we perished our maine tressle-trees,² so that wee could no more use our maine top-saile, lying most dangerously in the sea. The pinnesse likewise received a great leake, so that wee were inforced to seeke the next shoare for our reliefe.

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TO THE
SOUTH SEA.

And because famine was like to bee the best ende, wee desired to goe for Port Desire, hoping with seales and penguins to relieve our selves, and so to make shift to followe the Generall, or there to stay his comming from Brasil. The 24 of May wee had much winde at North. The 25 was calme, and the sea very loftie, so that our ship had dangerous foule weather. The 26 our fore-shrowdes³ brake, so that if wee had not beene neere the shoare, it had beene impossible for us to get out of the sea. And nowe being here mored in Port Desire, our shroudes are all rotten, not having a running rope whereto wee may trust, and being provided onely of one shift of sailes all worne, our top-sailes not able to abide any stressse of weather, neither have wee any pitch, tarre, or nailes, nor any store for the supplying of these wantes: and wee live onely upon seales and muskles, having but five hogshheads of porke within bourd, and meale three ounces for a man a day, with water for to drinke. And forasmuch as it hath pleased God to separate our fleete, and to bring us into such hard extremities, that only now by his mere mercy we expect reliefe, though otherwise we are

¹ For explanation of this term, see note 1, page 28. See also note 1, page 83.

² The *trestle-trees* are a couple of stout pieces of wood, or iron, fitted on each side of the lower mast-head for the purpose of supporting the heel of the topmast.

³ The *shrouds* are that portion of the rigging which supports the mast, and to which the ratlines are attached by which the men are enabled to go aloft.

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2ND VOYAGE
TO THE
SOUTH SEA.

hopelesse of comfort, yet because the wonderfull workes of God in his exceeding great favour toward us his creatures are farre beyond the scope of mans capacitie, therefore by him we hope to have deliverance in this our deepe distresse. Also forasmuch as those upon whom God will bestow the favour of life, with returne home to their countrey, may not onely themselves remaine blamelesse, but also manifest the trueth of our actions, wee have thought good in Christian charitie to lay downe under our handes the trueth of all our procéedings even till the time of this our distresse.

Given in Port Desire the 2 of June 1592. Beseching the almightie God of his mercie to deliver us from this miserie, how or when it shall please his divine Majestic.¹

John Davis, Captaine.
Randolph Cotton,²
John Pery.
William Maber, gunner.
Charles Parker.
Rouland Miller.
Edward Smith.
Thomas Purpet.
Mathew Stubbes.
John Jenkinson.
Thomas Edwards.
Edward Granger.
John Lewis.
William Hayman.
George Straker.
Thomas Walbie.
William Wyeth.
Richard Alard.
Stephan Popham.
Alexander Cole.

Thomas Watkins.
George Cunington.
John Whiting.
James Ling.
The Boat-swain.
Francis Smith.
John Layes.
The Boat-swaines mate.
—— Fisher.
John Austin.
Francis Copstone.
Richard Garet.
James Eversby.
Nicholas Parker.
—— Leonard.
John Pick.
—— Benjamin.
William Maber.³
James Not.
Christopher Hauser.

¹ John Jane, the historian of the voyage, does not appear to have signed this document.

² The captain of the *Daintie*, who had been left behind when his ship sailed for England, and who was Davis's guest on board the *Desire*.

³ A son, probably, of the gunner.

After they had delivered this relation unto our captaine under their handes, then wee began to travell for our lives, and wee built up a smiths forge and made a colepit, and burnt coles, and there wee made nailes, boltes, and spikes, others made ropes of a peece of our cable, and the rest gathered muskles and took smeltes for the whole companie. Three leagues from this harborough there is an Isle¹ with four small Isles about it, where there are great abundance of scales, and at the time of the yeere the penguins come thither in great plentie to breede. Wee concluded with the pinnesse that she should sometimes goe thither to fetch scales for us; upon which condition wee would share our victuals with her man for man; whereunto the whole companie agreed. So we parted our poore store, and shee laboured to fetch us scales to cate, wherewith wee lived when smeltes and muskles failed: for in the nepe streames wee could get no muskles. Thus in most miserable calamitie wee remained untill the sixt of August, still keeping watch upon the hils to looke for our Generall, and so great was our vexation and anguish of soule, as I thinke never flesh and blood endured more. Thus our miserie dayly increasing, time passing, and our hope of the Generall being very colde, our Captaine and Master were fully persuaded, that the Generall might perhaps goe directly for The Streights and not come to this harborough: whereupon they thought no course more convenient then to goe presently for The Streights, and there to stay his comming, for in that place hee could not passe, but of force wee must see him: whercunto the companie most willingly consented, as also the Captaine and Master of the pinnesse; so that upon this determinatian wee made all possible speede to depart.

CANDISH'S
2ND VOYAGE
TO THE
SOUTH SEA.

An isle
neere Port
Desire,
abounding
with scales
and pen-
guins.

The sixt of August wee set saile and went to Penguin-

They depart
the second
time from
Port Desire
for The
Streights of
Magellan.

¹ Penguin Island, to the southward of the River Desire, in Sea Bear Bay.

CANDISH'S
2ND VOYAGE
TO THE
SOUTH SEA.

isle, and the next day wee salted twentie hogsheds of seales, which was as much as our salt could possibly doe, and so wee departed for The Streights the poorest wretches that ever were created.

The seventh of August towarde night wee departed from Penguin-isle, shaping our course for The Streights, where wee had full confidence to meeete with our Generall.

The ninth wee had a sore storme, so that wee were constrained to hull,¹ for our sailes were not to indure any force.

Certaine
Isles never
before dis-
covered,
fifty leagues
north-east
off The
Streights.

The 14 wee were driven in among certaine Isles never before discovered by any known relation, lying fiftie leagues or better from the shoare East and Northerly from The Streights:² in which place, unlesse it had pleased God of

¹ See note 1, page 28; also note 1, page 83.

² These were undoubtedly the Falkland Islands. The credit of discovering this group has been divided between Davis and Richard Hawkins; the latter navigator, however, did not sight them until 1594, or two years after they had been seen by Davis.

In spite of the claims put forward by the supporters of these navigators, there is very conclusive evidence to prove that the Falkland Islands had been discovered long before the time of either Davis or Hawkins, and called the Ascension Islands, but by whom it is difficult to decide. Their discovery can hardly be ascribed to Vespuccius, who, even if he made a voyage at all, which is by no means certain, does not pretend to have sailed further south than the River Plate. Magellan, during his voyage round the world in 1519 and 1520, makes no mention of having seen the group; thus the honour of their discovery must belong to some unknown foreign navigator, for they appear, as the Ascension Islands, on the two charts constructed for Charles V, one (anonymous) in 1527, and the other by Diego Ribero in 1529. This is confirmed in Dr. Kohl's work, published in 1860, entitled *Die Beiden Ältesten General-Karten von Amerika, Ausgeführt in Den Jahren 1527 und 1529*. They are also to be seen under the same name in Gutiero's chart, engraved at Antwerp in 1562. Also in the map of Ferñao Váz Dourado, bearing date 1571.

On Schöner's globe, made in the year 1520, and now at Nuremberg, the group will be found to consist of seven islands, but named the Maiden Group.

Plancius, the Dutch cosmographer, on his chart of America, also has the Ascension Islands, and repeats the same on his General Map, "Orbis Terrarum Typus", both of which were drawn in 1594. In the third

his wonderfull mercie to have ceased the winde, wee must of necessitie have perished. But the winde shifting to the East, wee directed our course for The Streights, and the 18 of August wee fell with the Cape¹ in a very thick fogge; and the same night we ankered ten leagues within the Cape.² The 19 day wee passed the first and the second Streights.

CANDISH'S
2ND VOYAGE
TO THE
SOUTH SEA.

The first and
second
Streight.

The 21 wee doubled Cape Froward. The 22 we ankered in Salvage coove,³ so named, because wee found many Salvages there: notwithstanding the extreme colde of this place, yet doe all these wilde people goe naked, and live in the woods like Satyrs, painted and disguised, and flie from you like wilde deere. They are very strong, and threw stones at us of three or foure pound weight an incredible distance. The 24 in the morning wee departed from this coove, and the same day we came into the Northwest reach, which is the last reach of the Streights. The 25 we ankered in a good coove,⁴ within fourteene leagues of the South sea: in this place we purposed to stay for the General, for

Cape
Froward.
Salvage
coove.

The North-
west or last
reach of the
Streights.

volume of Hakluyt, edition 1600, p. 725, under the heading, "A ruttier or course to be kept for him that will sayle from Cabo Verde to the coast of Brasil, and along the coast of Brasil unto the River of Plate", will be found the following:—"And betweene Cabo Blanco and this harbour, are The Islands of Ascension, and they be eight." And, lastly, Humboldt says:—"I have found in the splendid edition of the Geography of Ptolemy, published at Rome in 1508, proofs of the Portuguese navigation along the east coasts of South America, which was extended to the fiftieth degree of South latitude."

Thus it will be seen that the existence of this group was known long before the days of either Davis or Hawkins.

The islands are sometimes alluded to, by early writers and cosmographers, as the Sanson, and occasionally the Simson, group; but these names are evidently abbreviations of Ascension.

¹ Cape Virgins, so called because sighted by Magellan on the day of the eleven thousand virgins.

² The anchorage here alluded to was, in all probability, in Possession Bay.

³ This name is not retained on the present charts.

⁴ One of the numerous coves in Long Reach.

CANDISH'S
2ND VOYAGE
TO THE
SOUTH SEA.

Their first
entrance
into the
South Sea.

They enter
the South
Sea the
second
time.

They un-
reeve the
running
rigging.

the streight in this place is scarce three miles broad, so that he could not passe but we must see him. After we had stayed here a fortnight in the deep of Winter, our victuals consuming (for our Seales stunk most vily, and our men died pitifully through cold and famin, for the greatest part of them had not clothes to defend the extremitie of the winters cold), being in this heavie distresse, our capitaine and Master thought it the best course to depart from the Streights into the South sea, and to go for the Isle of Santa Maria,¹ which is to the Northward of Baldivia² in 37 degrees and a quarter, where we might have reliefe, and be in a temperate clime, and there stay for the Generall, for of necessity he must come by that Isle. So we departed the 13 of September, and came in sight of the South sea. The 14 we were forced backe againe, and recovered a coove 3 leagues within the streights from the South sea. Againe we put forth, and being 8 or 10 leagues free of the land, the wind rising furiously at Westnorthwest, we were inforced againe into the streights only for want of sails: for we never durst beare saile in any stresse of weather, they were so weake: so againe we recovered the coove three leagues within the streights, where we indured most furious weather, so that one of our two cables brake, whereby we were hopeles of life. Yet it pleased God to calme the storme, and wee unrived our sheates, tackes, halliers, and other ropes,³ and mored our ship to the trees close by the rockes. We laboured to recover our ankor againe, but could not by any means, it lay so deepe in the water, and as we thinke cleane covered with oaze. Now had we but one ankor which had but one whole Flouke, a cable spliced in two places, and a piece of an olde cable. In the midst of these our troubles it pleased God that the wind came faire

¹ A low island situated near Concepcion Bay, on the coast of Chile.

² Valdivia.

³ In other words, "unrove the running rigging".

the first of October ; whereupon with all expedition wee loosened our morings, and weighed our ankor, and so towed off into the chanel : for wee had mended our boate in Port Desire, and had five oares of the pinnesse. When we had weighed our ankor, we found our cable broken, onely one strand helde:¹ then wee prayesd God ; for we saw apparantly his mercies in proseruing us. Being in the chanel, we rived² our ropes, and againe rigged our ship, no mans hand was idle, but all laboured even for the last gaspe of life. Here our company was devided ; some desired to go againe for Port Desire, and there to be set on shore, where they might travell for their lives, and some stood with the Captaine and Master to proceed. Whereupon the Captaine sayd to the Master : Master, you see the wonderfull extremitie of our estate, and the great doubts among our companie of the truth of your reports, as touching reliefo to be had in the South sea : some say in secret, as I am informed, that we undertake these desperate attempts through blind affection that we beare to the General. For mine owne part I plainly make knowne unto you, that the love which I bare to the Generall caused mee first to enter into this action, whereby I have not onely heaped upon my head this bitter calamity now present, but also have in some sort procured the dislike of my best friends in England, as it is not unknowen to some in this company. But now being thus intangled by the providence of God for my former offences (no doubt), I desire that it may please his divine Majestie to shew us such mercifull favour that we may rather proceed then otherwise : or if it be his wil, that our mortall being shal nowe take an ende, I rather desire that it may bee in proceeding then in returning. And because I see in reason that the limits of our time are now drawing to an end, I do in Christian charity intreat you all, first to forgive me in whatsoever I have bin grievous unto you ;

¹ See note 4, page 30.

² Reeved, or rove.

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TO THE
SOUTH SEA.

secondly, that you wil rather pray for our General then use hard speeches of him ; and let us be fully persuaded, that not for his cause and negligence, but for our own offences against the divine Majesty we are presently punished ; lastly, let us forgive one another and be reconciled as children in love and charity, and not think upon the vanities of this life : so shall we in leaving this life live with our glorious redeemer, or, abiding in this life, find favour with God. And now (good master) forasmuch as you have bin in this voyage once before with your master the general,¹ satisfie the cōpany of such truths, as are to you best knownen ; and you the rest of the generals men, which likewise have bin with him in his first voyage, if you heare any thing contrary to the truth, spare not to reprove it I pray you. And so I beseech the Lord to bestow his mercy upon us.

Then the master began in these speeches : Captain, your request is very reasonable, and I referre to your judgment my honest care, and great pains taken in the generals service, my love towards him, and in what sort I have discharged my duety, from the first day to this houre. I was commanded by the general to follow your directions, which hitherto I have performed.

You all knowe, that when I was extreamely sicke, the General was lost in my mates watch, as you have well examined : sithens which time in what anguish and grieve of minde I have lived God onely knoweth, and you are in some part a witnesse. And nowe if you thinke good to returne, I will not gainesay it : but this I assure you, if life may be preserved by any meanes it is in proceeding. For at the Isle of Santa Maria² I doe assure you of wheate, porke, and rootes enough. Also I will bring you to an

¹ The Master had served in Cavendish's first, and successful, voyage into the South Seas.

² Near Concepcion Bay, already alluded to at page 110.

Isle, where Pelicans bee in great abundance, and at Santos¹ wee shall have meale in great plenty, besides all our possibilitie of intercepting some shippes upon the coast of Chili and Peru. But if wee returne there is nothing but death to be hoped for: therefore doo as you like, I am ready, but my desire is to proceede.

CANDISH'S
2ND VOYAGE
TO THE
SOUTH SEA.

This Santos
standeth
upon the
coast of
Peru in 9
deg. of
Southerly
latitude.

These his speeches being confirmed by others that were in the former voyage, there was a generall consent of proceeding; and so the second of October we put into the South sea and were free of all land. This night the winde began to blowe very much at Westnorth-west, and still increased in fury, so that wee were in great doubt what course to take: to put into the Streights wee durst not for lacke of ground-tackle:² to beare sayle wee doubted, the tempest was so furious, and our sayles so bad. The pinnesse came roome³ with us, and tolde us that shee had received many grievous Soas, and that her ropes did every houre fayle her, so as they could not tell what shift to make: wee being unable in any sort to helpe them, stood under our coarses in view of the lee-shore, still expecting our ruinous end.

They enter
the South
sea the
third time.

The fourth of October, the storme growing beyond all reason furious, the pinnesse being in the winde of us, strake suddenly ahull,⁴ so that we thought shee had received some grievous sea, or sprung a leake, or that her sayles failed her, because she came not with us: but we durst not hull in that unmercifull storme, but sometimes tried⁵ under our

¹ This is probably Santa Bay, on the coast of Peru.

² *Ground tackle* is a general name given to anchors and everything appertaining to them.

³ *Rooming* was an old nautical expression signifying running to leeward. To come, or bare, roome, means to run down to a vessel to leeward.

⁴ Suddenly hove-to. See note 1, pages 28 and 83. The pinnace, at this time, broached-to, and probably foundered.

⁵ To *try* was an old term for "lying-to" in a gale of wind under reduced canvas. Special storm-sails were subsequently made and used, which were, and are to this day, called *trysails*.

CANTISH'S
2ND VOYAGE
TO THE
SOUTH SEA.

The *blacke*
pinnesse lost
in the South
sea.

maine coarse, sometime with a haddock of our sayle,¹ for our ship was very leeward, and most laboursome in the sea. This night wee lost the pinnesse, and never saw her againe.

The fift, our foresayle was split, and all to torne: then our Master tooke the mizzen and brought it to the foremast, to make our ship worke, and with our spritsaile we mended our foresayle, the storme continuing without all reason in fury, with haile, snowe, raine, and winde such and so mighty, as that in nature it could not possibly be more, the seas such and so lofty, with continuall breach,² that many times we were doubtfull whether our ship did sinke or swimme.

The tenth of October being by the accompt of our Capitaine and Master very neere the shore, the weather darke, the storme furious, and most of our men having given over to travell,³ we yeolded ourselves to death, without further hope of succour. Our captaine sitting in the gallery very pensive, I came and brought him some *Rosa solis*⁴ to comfort him; for he was so cold, that hee was scarce able to moove a joint. After he had drunke, and was comforted in heart, hee began for the ease of his conscience, to make a large repetition of his forepassed time, and with many grievous sighs he concluded in these words: Oh, most glorious God, with whose power the mightiest things among men are matters of no moment, I most humbly beseech thee, that the intollerable burthen of my sinnes may through the blood of Jesus Christ be taken from me: and end our daies with speede, or shew us some mercifull signe of thy love and our preservation.

¹ This is an expression I am unable to explain satisfactorily; but it was, doubtless, a nautical term for a peculiar method of reefing, or reducing, a sail.

² See note 1, page 118.

³ To travel meant to work, to labour, or to take pains.

⁴ *Rosa solis* was a beverage made with brandy, hot water, and spices; in fact, punch.

Having thus ended, he desired me not to make known to any of the company his intollerable griefe and anguish of minde, because they should not thereby be dismayed. And so suddenly, before I went from him the Sunne shined cleere; so that he and the Master both observed the true elevation of the Pole,¹ whereby they knew by what course to recover the Streights. Wherewithall our captaine and Master were so revived, and gave such comfortable speeches to the company, that every man rejoiced, as though we had received a present deliverance.

The next day being the 11 of October, we saw Cabo Deseado² being the cape on the South shore (the North shore is nothing but a company of dangerous rocks, Isles, and sholds). This cape being within two leags to leeward off us, our master greatly doubted, that we could not double the same: wherupon the captain told him: You see there is no remedy, either we must double it, or before noon we must die: therefore loose your sails, and let us put it to Gods mercy.

The master being a man of good spirit, resolutely made quicke dispatch and set saile. Our sailes had not bene halfe an houre aboard, but the footrope of our foresaile brake, so that nothing held but the oylet holes.³ The seas continually

¹ The *true elevation of the Pole* is a term probably derived from the latitude being ascertained, in the northern hemisphere, by obtaining the altitude of the Pole Star. Or else it is the zenith distance of the Sun, or other heavenly body, by which the latitude is determined. *Zenith* is the pole of the horizon, or that point in the heavens directly overhead. *Zenith distance* is the angular distance between a celestial body and the zenith.

² Cape Deseado is on the west coast of the island of Desolation, about five miles to the southward of Destruction Harbour, in lat. 52° 58' S.

³ This means, doubtless, that the sail was "held", or prevented from splitting, by the cringles or *eyelet-holes* in the clues (the two lower corners of the sail), to which the tack and sheet are secured for setting

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brake over the ships poope, and flew into the sailes with such violence, that we still expected the tearing of our sayles, or oversetting of the ship, and withall to our utter discomfort, wee perceived that wee fell still more and more to leeward, so that wee could not double the cape: wee were now come within halfe a mile of the cape, and so nere the shore that the counter-suffe¹ of the sea would rebound against the shippes side, so that wee were much dismayed with the horror of our present ende.

Being thus at the very pinch of death, the winde and Seas raging beyond measure, our Master veared some of the maine sheate;² and whether it was by that occasion, or by some current, or by the wonderfull power of God, as wee verily thinke it was, the ship quickened her way, and shot past that rocke, where wee thought shee would have shored.³ Then betweene the cape and the poynt there was a little bay; so that wee were somewhat farther from the shoare: and when we were come so farre as the cape, wee yeilded to death: yet our good God the Father of all mercies delivered us, and wee doubled the cape about the length of our shippe, or very little more. Being shot past the cape, we presently tooke in our sayles, which onely God had preserved unto us: and when we were shot in betweene the high lands, the wind blowing trade,⁴ without any inch of

The Cape
Descendo
most
danger-
ously
doubled,
after they
had been
nine dayes
in the South
sea.

the sail. Or else, as the courses in those days were fitted to reef on the foot, it was the reef-band, into which eyelet-holes are worked, that thus saved the sail.

¹ Counter surf.

² The experienced eye of the Master saw that the main sheet was too "flat aft", and that the ship, instead of going through the water, was rapidly "bagging" to leeward. The sheet eased, she quickly gathered way, and weathered the danger.

³ In other words, "struck".

⁴ A *trade wind* is that which, at certain seasons, blows regularly from one direction. It was, therefore, before the days of steam, very serviceable to vessels making a trading voyage.

sayle, we spooned¹ before the sea, three men being not able to guide the helme, and in sixe houres wee were put five and twenty leagues within the Streights, where wee found a sea answerable to the Ocean.

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In this time we freed our ship from water, and after wee had rested a little our men were not able to moove; their sinewes were stiffe, and their flesh dead, and many of them (which is most lamentable to bee reported) were so eaten with lice, as that in their flesh did lie clusters of lice as big as peason, yea, and some as big as beanes. Being in this miserie, we were constrained to put into a coove for the refreshing our men. Our Master knowing the shore and every coove very perfectly, put in with the shore, and moved to the trees, as beforetime we had done, laying our ankor to the seaward.

Here we continued until the twentieth of October; but not being able any longer to stay through extremitie of famine, the one and twentieth we put off into the chanell, the weather being reasonable calme: but before night it blew most extreame at Westnorthwest. The storme growing outrageous, our men could scarcely stand by their labour; and the Streights being full of turning reaches we were constrained by discretion of the Captaine and Master in their accounts to guide the ship in the hell-darke night, when we could not see any shore, the chanell being in some places scarce three miles broad. But our captaine, as wee first passed through the Streights drew such an exquisite plat of the same, as I am assured it cannot in any sort be bettered:² which plat hee and the Master so often perused,

An excellent
plat of the
Streights of
Magellan.

¹ A ship is said to be *spooning* or *spooming*, when, with no sails set, she is driving before a heavy gale. Dryden frequently makes use of the word, as—

“When virtue *spooms* before a prosp’rous gale,
My heaving wishes help to fill the sail.”

² It is very much to be regretted that this chart, constructed by Davis, if in existence, is now nowhere to be found.

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SOUTH SEA.

and so carefully regarded, as that in memorie they had every turning and creeke, and in the deepe darke night without any doubting they conveyed the ship through that crooked chanell: so that I conclude, the world hath not any so skilfull pilots for that place as they are: for otherwise wee could never have passed in such sort as we did.

The 25 wee came to an Island in the Straights named Penguin-isle, whither wee sent our boate to seeke reliefe, for there were great abundance of birds, and the weather was very caline: so wee came to an ankor by the Island in seven fadomes. Whilo our boate was at shore, and we had great store of Penguins, there aroso a sudden storme, so that our ship did drive over a breach¹ and our boate sanke at the shore.

Captaine Cotton and the Lieutenant being on shore leapt into the boate and freed the same, and threw away all the birdes, and with great difficultie recovered the ship: my selfe also was in the boate the same time, where for my life I laboured to the best of my power. The ship all this while driving upon the lee-shore, when wee came aboard, we helped to set sayle, and weighed the ankor; for before our comming they could searse hoise up their yarges, yet with much adoe they set their fore-coarse.

Thus in a mighty fret² of weather the seven and twentieth day of October wee were free of the Straights, and the thirtieth of October we came to Penguin-isle, being three leagues from Port Desire, the place which wee purposed to seeke for our reliefe.

Penguin-
isle within
three
leagues of
Port Desire.

When wee were come to this Isle wee sent our boate on shore, which returned laden with birdes and egges; and

¹ *Breach*, a term used to express a heavy surf or broken water. Shakespeare, in *Twelfth Night*, act ii, scene 1, causes Sebastian to say, "For some hours before you took me from the *breach* of the sea, was my sister drowned."

² A *fret of wind* is, according to some authorities, a "squally flaw"; in this case a fresh, or perhaps even a strong, gale is meant.

our men sayd that the Penguins were so thicke upon the Isle, that shippes might be laden with them; for they could not goe without treading upon the birds, whereat we greatly rejoiced. Then the captaine appointed Charles Parker and Edward Smith,¹ with twenty others to go on shore, and to stay upon the Isle, for the killing and drying of those Penguins, and promised after the ship was in harborough to send the rest, not onely for expedition, but also to save the small store of victuals in the shippe. But Parker, Smith, and the rest of their faction, suspected that this was a devise of the Captaine to leave his men on shore, that by these meanes there might bee victuals for the rest to recover their countrey: and when they remembered that this was the place where they would have slaine their Captaine and Master, surely (thought they) for revenge hereof will they leave us on shore. Which when our Captaine understood, hee used these speeches unto them: I understand that you are doubtfull of your security through the perversenesse of your owne guilty consciences: it is an extreame griefe unto me, that you should judge mee blood-thirstie in whome you have seene nothing but kinde conversation: if you have found otherwise speake boldly, and accuse mee of the wrongs that I have done; if not, why do you then measure me by your owne uncharitable consciences? All the company knoweth indeed, that in this place you practized to the utmost of your powers to murder me and the master causeles, as God knoweth, which evil in this place we did remit you: and now I may conceive without doing you wrong, that you againe purpose some evill in bringing these matters to repetition: but God hath so shortned your confederacie, as that I nothing doubt you: it is for your Masters sake that I have forborne you in your unchristian practizes: and here I protest before God that for his sake alone I will

¹ The ringleaders in the recently quelled mutiny. See page 102.

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yet indure this injury, and you shall in no sorte be prejudiced, or in any thing be by me commanded: but when we come into England (if God so favour us) your master shall knowe your honesties; in the meane space be voide of these suspicions, for, God I call to witnes, revenge is no part of my thought. They gave him thanks, desiring to go into the harborough with the ship, which he granted. So there were ten left upon the Isle, and the last of October we entred the harborough.

They enter
Port Desire
the third
time.

Our Master, at our last being here, having taken carefull notice of every creeke in the river, in a very convenient place, upon sandy oaze, ran the ship on ground, laying our ankor to seaward, and with our running ropes mored her to stakes upon the shore, which hee had fastened for that purpose; where the ship remained till our departure.

The third of November our boat with water, wood, and as many as shee could carry, went for the Isle of Penguins: but being deepe, she durst not proccede, but returned againe the same night. Then Parker, Smith, Townesend,¹ Purpet, with five others, desired that they might goe by land, and that the boate might fetch them when they were against the Isle, it being scarce a mile from the shore. The captaine bade them doe what they thought best, advising them to take weapons with them: for (sayd he), although we have not at any time seene people in this place, yet in the countrey there may be Savages. They answered, that here were great store of Deere and Ostriches; but if there were Salvages, they would devoure them: notwithstanding the captaine caused them to cary weapons, calievers,² swordes, and targets; so the sixt of November they departed by land, and the bote by sea; but from that day to this day wee never heard of our men.

Penguin
Isle scarce a
mile from
the maine.

Nine men
lost.

The 11, while most of our men were at the Isle, onely

¹ This man's name does not appear amongst those who signed the memorial. See page 106.

² See note 1, page 20.

the Captaine and Master with sixe others being left in the ship, there came a great multitude of Salvages to the ship, throwing dust in the ayre, leaping and running like brute beasts, having vizards on their faces like dogs faces, or else their faces are dogs faces indeed. We greatly feared least they would set our ship on fire, for they would suddenly make fire, whereat we much marvelled: they came to windward of our ship, and set the bushes on fire, so that we were in a very stinking smoke: but as soone as they came within our shot, we shot at them, and striking one of them in the thigh, they all presently fled, so that we never heard nor saw more of them. Hereby we judged that these Canibals had slaine our 9 men. When we considered what they were that thus were slaine, and found that they were the principall men that would have murthered our Captaine and Master, with the rest of their friends, we saw the just judgement of God, and made supplication to his divine Majesty to be mercifull unto us.

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TO THE
SOUTH SEA.

A great
multitude of
Salvages
with vizards
or faces like
unto dogs
faces.

While we were in this harborough, our Captaine and Master went with the boat to discover how farre this river did run, that if neede should enforce us to leave our ship, we might know how farre we might go by water. So they found that further then 20 miles they could not go with the boat.¹

The river of
Port Desire
but 20 miles
passable by
boats.

At their returne they sent the boate to the Isle of Penguins; whereby wee understood that the Penguins dried to our hearts content, and that the multitude of them was infinite. This Penguin hath the shape of a bird, but hath no wings, only two stumps in the place of wings, by which he swimmeth under water with as great swiftnes as any fish. They live upon smelts, whereof there is great abundance upon this coast: in eating they be neither fish nor flesh: they lay great eggs, and the bird is of a reasonable bignes,

¹ The river Desire carries a depth of water of six feet, to about fifteen miles from the mouth. Beyond this it shoals rapidly.

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TO THE
SOUTH SEA.

The great
benefit of
the herbe
called
Scurvy-
grasse.

They stayed
7 weekes in
Port Desire.

A pretty
devise to
make salt.

A poore
allowance
of victuals.

very neere twice so big as a ducke. All the time that wee were in this place, we fared passing well with eggs, Penguins, yong Seales, yong Gullcs, besides other birds, such as I know not: of all which we had great abundance. In this place we found an herbe called Scurvygrasse,¹ which wee fried with eggs, using traine oyle in stead of butter. This herbe did so purge y^e blood, that it tooke away all kind of swellings, of which many died, and restored us to perfect health of body, so that we were in as good case as whē we came first out of England. We stayed in this harbour until the 22 of December, in which time we had dried 20,000 Penguins; and the Captaine, the Master, and myselfe, had made some salt, by laying salt water upon the rocks in holes, which in 6 daies would be kernald.² Thus God did feed us cvē, as it were, with Manna frō heaven.

The 22 of December we departed with our ship for the Isle, where with great difficulty, by the skilful industry of our Master we got 14,000 of our birds, and had almost lost our captaine in labouring to bring the birds aboard: and had not our Master bene very expert in the set of those wicked tides, which run after many fashions, we had also lost our ship in the same place: but God of his goodnes hath in all our extremities bene our protector. So the 22, at night, we departed with 14,000 dried Penguins, not being able to fetch the rest, and shaped our course for Brasil.

Nowe our captaine rated our victuals, and brought us to such allowance, as that our victuals might last sixe moneths; for our hope was, that within sixe moneths we might recover our countrey, though our sailes were very bad. So the allow-

¹ *Cochlearia Officinalis*, a cruciferous plant. It is supposed to be an excellent antiscorbutic, and is much used in cases of scurvy by the natives of Greenland and other northern regions. It grows in great quantities in the Arctic zone, usually about 200 feet above the level of the sea, flowering from June to August.

² To *kern* means to corn, salt, or convert into powder.

ance was two ounces and a halfe of meale for a man a day, and to have so twise a weeke, so that 5 ounces did serve for a weeke. Three daies a weeke we had oile, three spoonfuls for a man a day; and 2 dayes in a weeke peason, a pint betweene 4 men a day, and every day 5 Penguins for 4 men, and 6 quartes of water for 4 men a day. This was our allowance; wherewith (we praise God) we lived, though weakly, and very feeble.

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TO THE
SOUTH SEA.

The 30 of January we arrived at the Ile of Placencia in Brasill, the first place that outward bound we were at: and having made the sholde,¹ our ship lying off at sea, the Captaine, with 24 of the company, went with the boat on shore, being a whole night before they could recover it. The last of January, at sun-rising, they suddenly landed, hoping to take the Portugales in their houses, and by that meanes to recover some Casavi-meale,² or other victuals for our reliefe: but when they came to the houses, they were all razed, and burnt to the ground, so that we thought no man had remained on the Iland. Then the captaine went to the gardens, and brought from thence fruits and roots for the company, and came aboard the ship, and brought her into a fine creeke which he had found out, where we might more her by the trees, and where there was water, and hoopes to trim our caske. Our case being very desperate, we presently laboured for dispatch away; some cut hoopes, which the coopers made; others laboured upon the sailes and ship; every man travelling for his life, and still a guard was kept on shore to defend those that laboured, every man having his weapon likewise by him.

The Ile of
Placencia in
Brasill.

The 3 of February, our men, with 23 shot, went againe to the gardens, being 3 miles from us upon the North shore, and fetched Cazavi-roots out of the ground, to relieve our company instead of bread; for we spent not of our meale while we staid here. The 5 of February being munday,

¹ The shoal (?).

² See note 2, page 94.

CANDISH'S
2ND VOYAGE
TO THE
SOUTH SEA.

Ominous
and fore-
warning
dreames.

our captaine and master hasted the company to their labour; so some went with the Coopers to gather hoopcs, and the rest laboured aboard. This night many of our men in the ship dreamed of murther and slaughter: In the morning they reported their dreames, one saying to another; this night I dreamt that thou wert slaine; another answered, and I dreamed that thou wert slaine: and this was general through the ship. The captaine hearing this, who likewise had dreamed very strangely himselfe, gave very streight charge, that those which went on shore should take weapons with them, and saw them himselfe delivered into the boat, and sent some of purpose to guard the labourers.

All the forenoone they laboured in quietnesse, and when it was ten of the clocke, the heat being extreme, they came to a rocke neere the woods side (for al this countrey is nothing but thick woods), and there they boyled Cazavi-roots, and dined: after dinner some slept, some washed themselves in the sea, all being stripped to their shirts, and no man keeping watch, no match lighted, not a piece charged. Suddenly as they were thus sleeping and sporting, having gotten themselves into a corner out of sight of the ship, there came a multitude of Indians and Portugales upon them, and slew them sleeping: onely two escaped, one very sore hurt, the other not touched, by whom we understood of this miserable massacre: with all speed we manned our boat and landed to succour our men; but wee found them slaine, and laied naked on a ranke one by another, with their faces upward, and a crosse set by them: and withall we saw two very great pinnesses come from the river of Jencro¹ very ful of men; whom we mistrusted, came from thence to take us: because there came from Jencro souldiers to Santos, when the Generall had taken the towne and was strong in it. Of 76 persons which departed in our

¹ Rio de Janciro,

ship out of England, we were now left but 27,¹ having lost 13 in this place, with their chiefe furniture, as muskets, calivers, powder, and shot. Our caske was all in decay, so that we could not take in more water then was in our ship for want of caske, and that which we had was marvellous ill conditioned: and being there mored by trees for want of cables and ankers, we still expected the cutting of our morings to be beaten from our decks with our owne furnituro,² and to be assayed by them of Jonero: what distresse we were now driven into I am not able to expresse. To depart with 8 tunnes of water in such bad casko was to sterve at sea, and, in staying, our case was ruinous.

CANDISH'S
2ND VOYAGE
TO THE
SOUTH SEA.

Thirteen
men lost at
the Ile of
Placencia
by their
owne ex-
treme neg-
ligence.

These were hard choises; but, being thus perplexed, we made choice rather to fall into the hands of the Lord then into the hands of men; for his exceeding mercies we had tasted, and of the others cruelty we were not ignorant. So concluding to depart, the 6 of February we were off in the chanell, with our ordinance and small shot in a readines for any assalt that should come, and, having a small gale of winde, we recovered the sea in most deepe distresse. Then bemoning our estate one to another, and recounting over all our extremities, nothing grieved us more then the losse of our men twise, first by the slaughter of the Canibals at Port Desire, and at this Ile of Placencia by the Indians and Portugals. And considering what they were that were lost, we found that al those that conspired the murthering of our captaine and master were now slain by salvages, the gunner only excepted. Being thus at sea when we came to

¹ According to this calculation, twenty-seven men must have died from disease since leaving England; and the majority of these must have succumbed before the testimonial, which bears forty signatures, was drawn up. It has been, however, proved that the paper was not signed by all on board.

² By "their own furniture" is meant the arms taken from the men recently slain by the Portuguese and Indians.

CANDISH'S
2ND VOYAGE
TO THE
SOUTH SEA.

Cabo Frio
30 leagues
east off the
Ile of Pla-
cencia.

Cape Frio, the winde was contrary; so that 3 weekes we were grievously vexed with crosse windes, and our water consuming; our hope of life was very small. Some desired to go to Baya¹ and to submit themselves to the Portugales rather then to die for thirst: but the captaine with faire perswasions altered their purpose of yeelding to the Portugales.

In this distresse it pleased God to send us raine in such plenty, as that we were wel watered and in good comfort to returne.

A most
strange and
noisome
kind of
worme bred
of unsalted
Penguins.

But after we came neere unto the sun,² our dried Penguins began to corrupt, and there bred in the a most lothsome and ugly worme of an inch long. This worme did so mightily increase and devoure our victuals, that there was in reason no hope how we should avoide famine, but be devoured of these wicked creatures: there was nothing that they did not devoure, only yron excepted: our clothes, boots, shooes, hats, shirts, stockings: and, for the ship, they did so eat the timbers as that we greatly feared they would undoe us by gnawing through the ships side. Great was the care and diligence of our captaine, master, and company to consume these vermine, but the more we laboured to kill them the more they increased; so that at the last we could not sleepe for them, for they would eate our flesh and bite like Mosquitos. In this wofull case, after we had passed the Equinoctiall toward the North, our men began to fall sick of such a monstrous disease, as I thinke the like was never heard of: for in their ankles it began to swell; from thence in two daies it would be in their breasts, so that they could not draw their breath, and then fell into their cods; and their cods and yarden did swell most grievously and most dreadfully to behold, so that they could neither stand, lie, nor goe. Whereupon our men

¹ Bahia.

² That is to say, when they approached the Equator.

grew mad with griefe. Our captaine with extreme anguish of his soule was in such wofull case that he desired only a speedie end, and though he were scarce able to speake for sorrow, yet he perswaded them to patience, and to give God thanks, and, like dutifull children, to accept of his chastisement. For all this, divers grew raging mad, and some died in most lothsome and furious paine. It were incredible to write our misery as it was: there was no man in perfect health but the captaine and one boy. The master being a man of good spirit with extreme labour bore out his griefe, so that it grew not upon him. To be short, all our men died except 16, of which there were but 5 able to moove. The captaine was in good health, the master indifferent, captaine Cotton and myselfe swolne and short winded, yet better then the rest that were sicke, and one boy in health: upon us 5 only the labour of the ship did stand.¹ The captaine and master, as occasion served, would take in and heave out the top sailes, the master onely attended on the sprit-saile, and all of us at the capsten without sheats and tacks.

In fine, our miserie and weaknesse was so great, that we could not take in nor heave out a saile: so our top-saile and sprit-sailes were torne all in peeces by the weather. The master and captaine taking their turnes at the helme, were mightily distressed and monstrously grieved with the most wofull lamentation of our sick men. Thus, as lost wanderers upon the sea, the 11 of June, 1593, it pleased God that we arrived at Bear-haven in Ireland, and there ran the ship on shore: where the Irish men helped us to take in our

CANDISH'S
2ND VOYAGE
TO THE
SOUTH SEA.

They arrive
at Bear-
haven in
Ireland the
11 of June
1593.

¹ Sixty out of seventy-six men perished during this disastrous voyage. It is a remarkable and noteworthy fact, that the four men who suffered least were officers who lived together in the cabin, and we may safely infer that the boy here alluded to as remaining in good health, was the cabin-boy or attendant of the officers, and therefore lived aft, and presumably on better fare and in a better atmosphere than the seamen.

CANDISH'S
2ND VOYAGE
TO THE
SOUTH SEA.

sailes, and to more our ship for flooting; which slender paines of theirs cost the captaine some ten pounds before he could have the ship in safetie. Thus, without victuals, sailes, men, or any furniture, God onely guided us into Ireland, where the captaine left the master and three or four of the company to keepe the ship: and within 5 dayes after he and certaine others had passage in an English fisher-boat to Padstow in Cornewall. In this maner our small romnant by Gods onely mercie were preserved, and restored to our countrey, to whom be all honour and glory, world without end.

The Voyage of Captaine John Davis to the Easterne India, Pilot in a Dutch Ship ; Written by himselfe.¹

To the Right Honourable, my exceeding good Lord and Master,
ROBERT, EARLE OF ESSEX, &c.

RIGHT honourable and mine exceeding good Lord, my dutie must advise mee to present this Journall of mine East Indian Voyage to your Lordships most judiciaall view. Wherein I have used my best diligence to discharge my duty, as neere as my slender capacitie could effect the same, according to those directions which your Lordship gave mee in charge at my departure ; when it pleased you to imploy mee in this Voyage, for the discovering of those Easterne parts of the world, to the service of her Majestie and the good of our Countrey. What I have seene I doe signifie in this Journall to your Lordship : and that which I have learned by the report of other Nations (when it shall please God to make mee happie by your Lordships favourable presence) I will make farther knowne to your Lordship, aswell of the King of Portugall his places of Trade and strength, as of the enterchangeable trading of those Easterne Nations among themselves: beginning at Cefala,² which is his first footing beyond the Cape of Buena Esperanza, and so proceeding to Mozambique, Ormus,³ Diu,⁴ Goa,⁵

¹ Taken from *Purchas his Pilgrimes*, Book 2, Part 1.

² Sofala, on the east coast of Africa.

³ Ormuz, at the entrance to the Persian Gulf.

⁴ A Portuguese settlement on the south coast of Katiwár.

⁵ The capital of Portuguese India.

VOYAGE
WITH
THE DUTCH
TO THE EAST
INDIES.

Conlam,¹ Onor,² Mangalor,³ Cochin,⁴ Columbo,⁵ Negapatan,⁶ Porto Grande in Bengala,⁷ and Malacca: As also to the Citie of Macao, in the Province of Canton, in the famous Kingdome of China, and to the Ilands of Moluccos, and Amboyne.⁸ Which places are all in the Portugals possession serving for his securitie and refuge. Moreover, he hath trade in Monomotapa,⁹ Melinde,¹⁰ Aden, Arabia, Cambaia, on the Coast of Coromandel, Balaguete,¹¹ and Orixá.¹² Of all which Nations there bee some dwelling in Achen in the Ile of Sumatra, trading in marchandize, where I have met with Arabians and a Nation called Rumos,¹³ who have

Constantinople is called New Rome, and thence in the East the Turkes are called Rumos, of that their chiefe Citie.

¹ Quilon, on the coast of Travancore.

² Onore, or Honahwar, on the coast of North Canara.

³ On the coast of Malabar.

⁴ An important Malabar sea-port.

⁵ On the west coast of Ceylon.

⁶ In the district of Tanjore, on the Coromandel coast.

⁷ Probably Chittagong. See Dr. Badger's remarks on the port of Bengala, in his Introduction to Varthema's *Travels*, p. lxxx.

⁸ One of the Moluccas.

⁹ Monomotapa and its "Emperor" are referred to by Livingstone and Macqueen (see *R. G. S. J.*, xxvi, pp. 112, 117; xxvii, pp. 383, 384; and xxx, p. 154). The older Portuguese applied the name Monomotapa to the whole extent of country lying behind the sea-board of Mozambique. The derivation is from *Mwene*, a Lord, and *Mutapa*, the name of the chief district. The modern name is Chedima. See Burton's *Lands of Cazembe*, p. 22, n.; and Gamitto and Monteiro, who give an account of Monomotapa.

¹⁰ Malindi, a port on the east coast of Africa, north of Zanzibar, was one of the ports settled by Arabs, and seized by the Portuguese between 1498 and 1507.

¹¹ Balaghat ("above the ghauts"), a region on the eastern side of India, including the districts of Ballári, Kadapa, and Karnúl.

¹² The province of Orissa, on the east coast of India.

¹³ The Turks, or subjects of the Sultan-i-Rúm. When the Seljukian Turks established themselves in Asia Minor, *i.e.*, the Roman Empire, they became the inheritors of the name of Rúm, and their dominion, with its capital at Iconium, was especially known as Rúm. Hence the Turks of Anatolia generally, and the Ottomans who came to the front among them, continued to be known to Asia as the people of Rúm. When they became powerful in Arabia, and sent out fleets to India, and

traded many hundred yeares to Achen. These Rumos come from the Red Sea. There are in Achen many Chineses that use trade, of whom I have beene kindly used, and can well informe your Lordship of that worthy Kingdome of China. The trades of Gusarato¹ are very ample. All which the Portugals with the Locke of discretion have providently long concealed, which now through Gods favour are made knowne unto us. I have here inclosed sent your Lordship the Alphabet of the Achens Language, with some words of the same; which they write after the manner of the Hebrewes. I have also sent by Master Tomkins of their Coine, which is in usuall payment. That of Gold is named a Mas,² and is nine pence halfe penie neerer. Those of Lead are called Caxas:³ whereof a thousand sixe hundred make one Mas. Good my Lord, remember the poore Widowes Mite. For surely, if I could doe more in this service, or otherwise, it should not be omitted.

VOYAGE
WITH
THE DUTCH
TO THE EAST
INDIES.

From Middleborough, this first of August, 1600.

Your Lordships most dutifull Servant,

JOHN DAVIS.

even to the Archipelago, they were still known as Rûmis. Varthema calls Diu-Bandierrumi (Bandar-i-Rumi) "the Turk's port", as he correctly explains.

¹ The province of Gujrat, on the west coast of India.

² According to Bailey's Dictionary (1768) a *Mass* is a piece of Sumatran money of the value of one shilling. In Burmah a *math* is a gold coin worth 6d., and in China a *mace* is equivalent to 7d. See also *Lancaster's Voyages*, p. 258.

³ Cass.

A briefe Relation of Master JOHN DAVIS, chiefe Pilot to the
Zelanders in their East-India Voyage, departing from
Middleborough the fifteenth of March, Anno 1598.

VOYAGE
WITH
THE DUTCH
TO THE EAST
INDIES.

The fifteenth hereof we departed from Flushing with two ships in Consort, the *Lion* and *Lionesse*: the *Lion* being foure hundred tuns, had in her a hundred three and twentie persons: the *Lionesse* two hundred and fiftie tuns, had a hundred persons. Mushrom,¹ Clark, and Monef of Middleborough, Owners and only Adventurers thereof. Cornelius Howteman, chiefe Commander of both ships, having a Commission from Grave Maurice,² by the name Generall. The two and twentieth we anchored in Tor bay with bad winds.

¹ This was Balthazar de Moucheron, who presided over the great mercantile house of the Mouchérons at Veere, a sea-port town in the island of Walcheren. The Mouchérons were of French origin, possessing large estates in Normandy. The father of Balthazar is supposed to have died at Antwerp in 1565, and it is presumed that the son went from Brabant to Zeeland soon after the taking of that city by Parma, for his name is amongst those of the principal personages of Antwerp who signed the capitulation. Balthazar has the credit of being the man who laid before William the Silent the first proposal of a voyage to the North. In 1590 he was settled at Middleburg, whence he was carrying on an extensive trade with Antwerp, Caen, Rochelle, Granville, St. Malo, Morlaix, Roscoff, etc.

His brother Melchior was his agent on the River Dwina, where he had also established commercial relations, and to whom is accredited the foundation of the town of Archangel. In 1597, or the following year, Balthazar removed to Veere, deputing the management of his affairs to his elder brother, Pierre, who, it may be remarked, was the grandfather of the eminent landscape painter, Frederik de Moucheron. An account of their connection with this voyage, in which Davis was engaged, will be found in the Introduction.

² Count Maurice succeeded his father, William the Silent, as Stadtholder of Holland.

The seventh we set saile, the twentieth we had sight of Porto Santo,¹ the three and twentieth we fell with Palma:² the last hereof we came with the Islands of Cape Verde.³

VOYAGE
WITH
THE DUTCH
TO THE EAST
INDIES.

The first we anchored at Saint Nicholas, one of the said Ilands in latitude sixtene degrees sixtene minutes. Here wee watered the seventh, wee departed the ninth, wee fell with Saint Jago.

April.
May.

The ninth we fell with the Coast of Brasill, in seven degrees of South latitude, not being able to double Cape Saint Augustine:⁴ for being about the Line we had very unconstant weather and bad windes; being in this desperate case, we shaped our course for a small Ile named Fernando Loronha,⁵ in foure degrees of South latitude, the fifteenth we anchored upon the North-side thereof in eightene fathomes. We found in this Iland twelve Negroes, eight men, foure women. It is a very fruitfull Isle, and hath exceeding good water, it aboundeth with Goates, it hath also Beefes, Hogs, Hens, Mellons, and Ginnie Corne:⁶ with plentie of fish and Sea-birds. These Negroes were placed here by the Portugals to manure the Ile. Three yeeres past in which there hath no ships beene with them.

Fernando
Loronha.

¹ A high island about 22 miles E.N.E. of Madeira. There is an anchorage on the South side, where water and refreshments can be obtained.

² Palma, the N.W. island of the Canary group, 8,000 ft. high.

³ The Cape Verde Islands, situated between 14° 20' and 17° 20' N. lat., and between 22° 25' and 35° 30' W. long., consist of the following: S. Antonio, S. Vicente, S. Nicholas, Sta. Luzia, Sal, Boavista, Maio, S. Iago, and Brava. They were discovered by an expedition sent out by Prince Henry in 1446, though the group was known to the ancients under the name of Insulæ Gorgones.

⁴ Cape St. Augustine, about 17 miles south of Pernambuco, is a ridge of high land jutting out into the sea.

⁵ Fernando Noronha consists of one large and several small islands. It is now a penal settlement of Brazil.

⁶ Maize, sometimes called Guinea wheat.

VOYAGE
WITH
THE DUTCH
TO THE EAST
INDIES.

The six and twentieth we departed from this Ile, the wind at East North-East, the last hereof we doubled Cape Saint Augustine.

August.
September.
Abrollos.

The tenth we passed the Abrollos, which was the greatest of our feare (the shoals lye from the Coast of Brasill, farre off into the Sea, in one and twentie degrees, and are dangerous).¹ Whereupon our Baase² (for so a Dutch Captaine is called) chose a Master of Mis-rule by the name Kesar.³ Now the authoritie of Riot lay in this disordered Officer, who after Dinner could neither salute his friends, nor understand the Lawes of Reason. And those that ought to have beene most respective, were both lawlesse and witlesse. In this dissolute manner we wasted three dayes, which being ended, and having againe recovered our former discretion, wee shaped our course for Cape Bona Esperanza, sayling towards the Court of Bacchus, unto whom this Idolatrous Sacrifice was made, as by the end appeareth.

November.
Bay of
Saldania.

The eleventh we anchored in the Bay of Saldania,⁴ in thirtie foure degrees of the South Pole, ten leagues short of Cape Bono Esperanza, where there are three fresh Rivers. The people came to us with Oxen and Sheep in great plentie, which they sold for peices of old Iron and spike Nails. The best of that we bought, cost not more then the value of one penie in old Iron. Their Cattell are large, and under severall markes, having upon the backe by the

¹ The Abrolhos Rocks are situated in 17° south latitude, about forty miles off the coast of Brazil. There is a channel between these shoals and the main land.

² *Baas*, in Dutch, means master or foreman. From this originates the word *Boss*, signifying a head man, extensively used in English factories, and also frequently in America.

³ *Keizer*, in Dutch, means Emperor.

⁴ Saldanha Bay, on the West Coast of Africa, is rather more than 50 miles to the northward of Cape Town.

fore shoulders a great lump of flesh like a Camels backe.¹ Their Sheepe have exceeding great tailes only of fat, weighing twelve or fourteene pounds: they have no wooll but a long shag haire. The people are not circumcised, their colour is Olive blacke, blacker then the Brasilians, their haire curled and blacke as the Negroes of Angola, their words are for the most part in-articulate, and, in speaking, they clocke with the Tongue like a brood Hen, which clocking and the word are both pronounced together, verie strangely.²

They goe all naked, having only a short Cloke of Skinnes, and Sandals tyed to their feet, they paint their faces with divers colours, they are a strong active people, and runne exceedingly, and are subject to the King of Monomotapa,³ who is reported to be a mightie King, their weapons are only hard Darts. The Flemmings offering them some rude wrong, they absented themselves three dayes, in which time they made great fires upon the Mountaines in the Countrey. The nineteenth hereof there came great troupes of them to us, bringing much cattell with them, and in the time of bartering, suddenly taking their advantage, they set upon us, and slue thirteene of our people with hand Darts, which at foure Pikes length could not offend.

Notwithstanding, the Flemmings fled before them like Mice before Cats, throwing away their weapons most basely. And our Baase to save himselfe stayed aboard, and sent us Corslets, Two-hand-swords, Pikes, Muskets, and Targets, so we were armed and laden with weapons, but there was neither courage nor discretion. For we stayed

¹ This is probably the Cape Buffalo, *Bubalus Caffer*. Although an animal of a ferocious nature, it has been tamed, and used for domestic purposes. The allusion to its hump appears to have been rather exaggerated by Davis, as the Cape species does not possess it so prominently as do other members of the same family.

² It is scarcely possible to convey an idea of the language of the natives of South Africa better than is here described.

³ See note 2, page 130.

VOYAGE
WITH
THE DUTCH
TO THE EAST
INDIES.

M. Tomkins,
English-
man.

by our Tents being beleagred with Canibals and Cowes; we were in Muster Giants, with great armed bodies, but in action Babes, with Wrens hearts. Hereupon Master Tomkins and my selfe undertooke to order these Fellowes, from that excellent methode which we had seene in your Lordships most honourable Actions. Some consented to us, but the most part unwilling, and divers ranne to the Pottage Pot, for they swore it was dinner time. This night we went all aboard, only leaving our great Mastive Dogge behind us, who by no meanes would come to us. For I thinke he was ashamed of our Companie.

This land is a good soile, and an wholsome Aire, full of good herbes, as Mints, Calamint,¹ Plantine, Ribwort, Trifolium, Scabious, and such like. The seven and twentieth wee set sayle, the last hereof we doubled Cape Bona Esperanza.

December.

The sixt we doubled Cape das Agulios,² which is the most Southerly Promontorie of Africa, where the Compasse hath no variation. This Cape lyeth in thirtie five degrees of the South Pole.

1599.

January,
1599.
Madagas-
car.

February.
Bay of
Saint
Augustine.

The sixt we fell with the Ile Madagascar, short of Cape Romano:³ we spent this monoth to double that Cape, not being able wee bore roome⁴ with the Bay Saint Augustine, which lyeth upon the South West part of Madagascar, in three and twentie degrees fiftie minutes.

The third wee anchored in the same Bay,⁵ where wee saw

¹ An herbaceous plant, *Melissa Calamintha*, belonging to the *Labiaceæ*, not unfrequently used as a pectoral medicine.

² Cape Agulhas, is the extreme southern point of Africa. A lighthouse is now erected on the Cape, which shows a fixed white light, visible in clear weather 18 miles.

³ This Cape has no existence on the charts of the present day.

⁴ See note 3, page 113.

⁵ A fairly good anchorage on the S.W. coast of Madagascar, but deep water. It is not considered safe during the N.W. monsoon, which blows directly into the bay, always accompanied by a heavy swell.

many people upon the shore, but when we landed they fled from us: for the other Voyage our Baase was in this Bay, where hee greatly abused the people, and tooke one of them, bound him to a Post, and shot him to death, with other shamefull disorders. After seven dayes by much meanes that we made, some of them came to us, and brought us Milke and one Cow, which wee bought, and after would no more abide us. They are a strong, well shaped people, and cole blacke, their Language sweete and pleasing: their weapons halfe-Pikes, headed with Iron as a Harpon,¹ which they keepe very bright, they goe wholly naked.

The Countrey seemeth to be very fruitfull, and hath great store of Tamaryn trees: we found Beanes growing upon a high tree, the Cods being two foot long, with answerable bignesse, and are very good meate, here are many Camelions.

It was no small miserie that wee English indured, especially in this Bay. But God the ever-living Commander was our only succour.

The eight wee came aboard Dog hungry and meatlesse, March. the fourteenth wee set saile from this place, which we named Hungry Bay, shaping our course upon the North side of the Ile. The nine and twentieth we came with the Ilands Comoro, lying betweene twelve and thirteene degrees, and are five Ilands, Mayotta, Ausuame, Magliaglie, Saint Christophero, Spirito Sancto.² The thirtieth we anchored at Mayotta close by a Towne, where we found many people that seemed to rejoyce at our comming; they came aboard our shippes with presents of Victualls.

The King sent to have our Chiefe come ashore, promising

¹ Harpoon.

² The Comoro Islands, in the Mozambique Channel, are four in number, viz.: Comoro, Mohilla, Mayotta, and Johanna. St. Christopher, or Juan de Nova, Island, is about 350 miles to the southward of the Comoro group, about midway in the Mozambique Channel. The island of Johanna is sometimes called Anzuan, hence the name by which it was known to Davis.

VOYAGE
WITH
THE DUTCH
TO THE EAST
INDIES.

him kindnesse. So our Baase went, the King met him with many people, having three Drummes beating before him. He was richly appavelled, so were his followers, with long silke Garments imbrodred, after the Turkish manner. The King having used us with such kindnesse as we required, wrote a Letter in our behalfe to the Queen of Ansuame, for there is no King.

Aprill. The seventeenth we departed: the nineteenth we anchored at Ansuame,¹ before a City named Demos: which hath beene a strong place, as by the ruines appeare. Their houses are built with free hewed stone and lime, the walls of the Citie are most ruinated, that which remaineth is as bigge as Plimmoth. This Queene used us exceeding friendly; but she would not be seene. In these Islands we had Rice, Oxen, Goats, Cocos, Bonanas, Oranges, Limons, and Citrons. The Inhabitants are Negroes, but smooth haired, in Religion Mahometists, their weapons are Swords, Targets, Bowes and Arrowes. These Islands are pleasing in sight, and fruitfull in nature. Here we found Merchants of Arabia and India, but what Commodities the Islands yeeld, I could not learne. They desire Weapons and Yron; they greatly regard Paper. The eight and twentieth, wee departed, passing through the Islands Mascarenhas,² by the sholds do Almirante.³

May. The three and twentieth, we fell with the Islands of Maldivia,⁴ which are very low, close by the water, wholly

¹ Johanna.

² I am inclined to think that the islands here named are the Aldabra Islands, or Cosmoledo Group. Mascarenhas is the old name for the island of Bourbon or Reunion, near which they could not possibly have been.

³ The Amirante Islands are the S.W. group of the Seychelles, and consist of several detached small islands, coral reefs, and banks. Only two have resident negroes upon them, the whole population being under 100 souls.

⁴ The Maldive, or Maldivh, Islands consist of nineteen Atolls or coral groups extending over a distance of 470 miles of latitude, and 70 of

covered with Cocos trees, so that we saw the trees but not the shore. Here we anchored, and refreshed our selves: Many of the Countrey Boats passing by us, but none would come to us: whereupon our Baase sent out the ships boats to take one of them. The foure and twentieth, they brought a Boat aboard us covered with Mats, like a close Barge. In this Boat was a Gentleman and his Wife; he was apparelled in very fine white Linnen, after the Turkish manner. In his rings were rich stones, his behaviour was so sweete and affable, his countenance so modest, and his speech so gracefull, as that it made apparant shewe he could not be lesse then a Noble-man. He was unwilling to have his Wife scene: notwithstanding, our Baase went with him into his Boat, to see her: he also opened her Caskot, wherein were some Jewels and Ambergreese. He reported that she sate with mournfull modestie, not using one word: what was taken from them I knowe not; but in departing this Gentleman shewed a Princely spirit. His colour was blacke, with smooth haire, a man of middle stature. In these Islands there is great trade by reason of the Cocos: for they make Ropes, Cables, Sayles, Wine, Oyle, and a kind of bread of that tree, and his fruit. They report that there be 11,000 of these Islands. The seven and twentieth, wee set sayle: this morning there came an old man aboard us that spake a little Portugall, he was our Pilot through the Chanell, for by chance we fell with the true passible Chanell named Maldivia, in latitude foure degrees, fiftene minutes of the North-pole, where the Compasse is varied seventene degrees Westerly. In

longitude, situated in the Indian Ocean. The islands in general are not more than five or six feet above the level of the sea, and are covered with cocoa-nut trees, which grow to a height of from 70 to 90 ft., but the banyan-tree attains even a greater height. The natives are industrious, expert navigators, and have shown great kindness to shipwrecked sailors. They are Muhammadans, and are governed by a Sultan, whose rank and title are hereditary.

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THE DUTCH
TO THE EAST
INDIES.

missing this Chanel, it is a dangerous place. The trade of shipping through this Chanell is very great of divers Nations, from most places of India, as I hope in your Lordships presence at large to enforme your Honour.

June.

The third we fell with the Coast of India, in eight degrees and forty minutes of Northerly latitude, neere about Cochin, and coasting this shore, we shaped our course East for Camorin, and from thence to the Island Sumatra. The thirteenth, we saw the coast of Sumatra, in five degrees forty minutes of Northerly latitude. The sixteenth, we spake with the people, staying at an Island by the shore to take in water.

Achin.

The one and twentieth we anchored in the Bay of Achin, in twelve fathome. Being here, the King sent his Officers to measure the length and breadth of our ships, to take the number of our Men and Ordnance, which they did. With those Officers, our Baase sent two of his people with Presents to the King, a Looking-glasse, a Drinking-glasse, and a Bracelet of Corall. The one and twentieth, our men came aboard, whome the King had apparelled after his Countrey manner, in white Calicut cloth: they brought newes of Peace, Welcome, and plenty of Spicery. We found foure Barks riding in the Bay, three of Arabia, and one of Pegu, that came to lade Pepper. Here was also a Portugall, named Don Alfonso Vincent, that came with foure Barkes from Malacca, to prevent our trade, as the sequell doth shew. The three and twentieth, at mid-night, the King sent for our Baase, and sent a Noble man for his Hostage: hee went presently on shore, whom the King used very kindly, promising him free trade. He apparelled him after the Country manner, and gave him a Cryse¹ of Honour: This Cryse is a kind of Dagger, whose haft and handle (for it hath no crosse nor hilt) is made of a kind of mettall, which the King esteemeth farre beyond Gold, and

¹ A Crease, or Kris, is a formidable dagger, or short sword, used by the Malays.

is set with Rubies. This mettall hath a fine lustre : it is death to weare this Cryse, but from the Kings gift : and having it, there is absolute freedome to take Victualls without money, and to command the rest as slaves. The sixe and twentieth, our Baase came aboard with a Boat-load of Pepper, reporting words above credit, how the King had used him, of his mightie fortune, and of the wonderfull trade that he had procured, with no smal *Gaudeamus in superbia nostra* :¹ he further said, that the King did often demand of him if he were not of England, which he did strongly denie, using some unfit speeches of our Nation. Further, said he, being aboard, I wish I had given a thousand pound that we had no English among us : thus we, poore soules, were thrust into the Corner. The seven and twentieth, our Merchants went on shore with their Merchandise, having an house by the Kings appointment.

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THE DUTCH
TO THE EAST
INDIES.

Englishmen
abused by
Hollanders.

The twentieth, our Baase beeing with the King was ex^d July. ceeding well entertained, the King very importunate to know if he were English : Tell me truely (said the King), for I love souldiers ; and I must further tell you, Alfonso hath been earnest with me to betray you, but it shall not be ; for I am your friend : and therewith gave him a Purse of Gold. He giving thanks, answered that he was not of England, but of Flanders, and at the Kings service. I have heard of England, said the King, but not of Flanders : what Land is that ? He further enquired of their King, State, and Government ; whereof our Baase made large report, refusing the Authoritie of a King, relating the government of Aristocratie.

England
famous.

He further made sute to the King, to give commandement that his subjects should not call him English : for it was a bitternes unto him : which the King granted. Againe he required to know if there were no Englishmen in the

¹ Literally, "Let us rejoyce in our pride." In other words, "With no small swagger or conceit."

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THE DUTCH
TO THE EAST
INDIES.

Diverse
Englishmen
in this
Voyage.

ships: he answered, there be some English in the ships, but they have been bred up in Flanders. I understand, said the King, that there be some that differ both in apparell, language, and fashion: what are those? he answered, English; of which my chiefe Pilot is one. Well, said the King, I must see those men. As touching your Merchandize it shall be thus: I have warres with the King of Ior (this Kingdome of Ior is the South-point of Malacca)¹ you shall serve me against him with your ships: your recompence shall be your lading of Pepper; this was agreed. The twenty eighth, our Baase came aboard, accompanied with one of the Sabandars, the Secretary, Merchants of Mecka, Turks, Arabians, and Don Alfonso, with some Portugalls; all which departed passing drunke.

August.

The King began to shew an altered countenance the twentieth hereof, saying to our Baase, Wherefore doth not that English Pilot come to me? (for he would not suffer me nor M. Tomkins to goe on shore). I thinke when you have your Pepper, you will runne away without doing me service, as you have promised; whereupon I was presently sent for. The one and twentieth, I came on shore. The two and twentieth, I went to the King early in the morning, who did use me very friendly. I stayed with him foure houres or better, banqueting and drinking. After an houre, he caused the Sabandar to stand up, and bad me likewise stand up. The Sabandar tooke off my Hat, and put a Roll of white linnen about my head; then he put about my middle a white linnen cloth that came twice about me, hanging downe halfe my legge, imbroydered with Gold: then againe he tooke the Roll from my Head, laying it before the King, and put on a white garment upon me, and upon that againe one of red. Then putting on the Roll upon my Head, I sate downe in the Kings presence, who

Davis his
entertainment
with
the King of
Achin.

¹ The kingdom of Johore.

dranke to me in Aquavitæ,¹ and made me eate of many strange meates. All his service is in Gold, and some in fine Porcellane. Hee eateth upon the ground, without Table, Napkins, and other linnen. Hee enquired much of England, of the Queene, of her Basha's, and how she could hold warres with so great a King as the Spaniard? (for he thinketh that Europo is all Spanish). In these his demands he was fully satisfied, as it seemed to his great good liking.

The three and twentieth, the Prince sent for me; I rid to his Court upon an Elephant: hee used me exceeding well. Excessive eating and drinking was our entertainment. During the small time of my beeing on shore, I met with a very sensible Merchant of China, that spake Spanish, of whom I learned some things, which I hope will give your Lordship good contentment. Here are many of China that use trade, and have their particular Towne: so have the Portugals, the Gusarates,² the Arabians, and those of Bengala and Pegu. Our Baase disliking that I so much frequented the Chinaes company, commanded me aboard. The next day having some sowre lookes of the King, he came aboard with a dull spirit.

The first hereof, the King made shew that we should receive in Ordnance for the battery of Ior, and take in souldiers to depart for that service. September.

There were many Gallies manned, and brought out of the River, riding halfe a mile from our ships; the Sea full of Prawes³ and Boats all manned: there came aboard us the Secretary, named Corcoun, and the chiefe Sabandar named

¹ Aquavitæ was a beverage made of beer; it contained a large proportion of hops, and was well fermented.

² The inhabitants of Gujrat.

³ Prahus. Prah is the Malay word for a boat. The larger Malay war-vessels were over 150 feet in length, and would carry 100 rowers, besides about 60 fighting men. The Prahus were remarkable for their swiftness.

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Abdala, with many souldiers weaponed with Courtelasses, Hand-darts, Cryses, and Targets. They brought with thē many kinds of meat, and a great Jar of Aquavitæ : herewith they made shew of friendship with banqueting.

A strange
seed, and
strange
treachery.

We mistrusting some treachery, filled our tops with stones, made fast our gratings, and prepared our weapons : whereat our Baase was exceeding angry, commanding all to be dissolved, but we would not. There is in this Countrey a kind of Seed, whereof a little beeing eaten, maketh a man to turn foole, all things seeming to him to be Metemorphosed ; but above a certaine rate it is deadly poyson : with this all the meate and drinke which they brought was infected. In banqueting, the Sabandar and Secretarie sent for me, M. Tomkins keeping me company, and used some words to one of his company, but what I knowe not ; in short time we were foole-frolicke, gaping one upon an other like Antiques, our Baase being prisoner, and knewe it not. Suddenly when a token was given from the other Ship (for there the like treachery was used by the Secretary, who went from our ship thither to act the same) they set upon us, murdered our Baase, and slew divers others, M. Tomkins, my selfe, and a French-man defended the Poope, which if they had recovered, our ship had been lost : for they had the Cabin, and some were belowe among the Ordnance, by creeping in at the Ports. The Master of our ship, which they call Captaine, leapt into the Sea, so did divers others ; but recovered the ship againe, and came aboard when all was done. In the end we put them to flight (for our tops plagued them sore), which when I saw, I leapt from the Poope to pursue them, M. Tomkins leaping after me, there came a Turke out of the Cabin, and wounded him grivously, they lay together tombling each for his life : which seeing I ranne the Turke in with my Rapier ; and our shipper¹ presently with a halfe Pike thrust him downe the throat into

¹ *Schipper* is the Dutch for Captain or Master, whence skipper.

the body. In the other ship all the chiefest were murdered; and the shippe taken; we cut our Cables, and drave to her, and with our shot made the Indians flie; so we recovered the ship: the Gallies¹ durst not come neere us. In this great miserie it was some pleasure to see how the base Indians did flye, how they were killed, and how well they were drowned. The Sea was covered with Indian heads: for they swamme away by hundreds.

The Sabandare Abdala, and one of the Kings neere Kinsmen were slaine, with many others; and the Secretarie hurt. The King being by the Sea-side, with many people, when the newes came of the Sabandars death and their great overthrow, the furious Infidels mured all our men a shore, only eight excepted, whom the King fettered for Slaves. We lost in this misfortune threescore and eight persons, of which we are not certaine how many are captived: only of eight wee have knowledge. Wee lost two fine Pinnasses of twentie tunnes a peece, and our ship Boate.

This day we departed and anchored before the Citie Pider,² where we had sent a Pinnasse for Rice, hoping to have newes of her, but had not. The second there came eleven Gallies with Portugals (as we thought) to take our ships. Wee sunke one, and beate the rest: so they fledde. This after-noone came aboard us the sonne of Lafort, a French Marchant, dwelling in Seething-Lane, who was one of the eight Prisoners, with this Message from the King. Shamo you not to be such drunken beasts, as in drunkenesse to murder my people, whom I sent to you in kinnesse. Therefore he required our best ship for satisfaction, and for the reliefe of our men. Doe this said he to Lafort, and I will make you a great Nobleman, but wee would not, and being distressed of water, departed to the Ilands Pulo

¹ A galley was any low flat-built vessel, propelled by both oars and sails.

² A town on the north coast of Sumatra.

Botum upon the Coast of Quedia¹ in six degrees fifty minutes, where we refreshed and watered.

During the time of our abode in Achien, we received into both our ships a hundred and fortie tuns of Pepper, what stones or other Marchandize I know not. But at the day of Treason our Marchants lost all the Money and Marchandize a-shore, which they report to bee of great value, and many young Adventurers were utterly ruinated : among which I doe most grieve at the losse of poore John Davis, who did not only lose my friendly Factor, but also all my Europe Commodities, with those things which I had provided to shew my dutie and love to my best Freinds.

So I may conclude, that although India did not receive mee very rich, yet she hath sent mee away reasonabable poore.

The Ile Sumatra is a pleasing and fertile Soyle, abound-ing with many rare and excellent Fruites ; of Graine they have only Rice, which is their Bread. They plowe the ground with Buffs,² of which thero are great plentie, but with small skill and losse diligence.

Rice.

The Rice groweth in all respects as our Barley.

Pepper.

Of Pepper they have exceeding plentie, Gardens of a mile square, it groweth like Hops from a planted Root, and windeth about a stake set by it untill it grow to a great bushie Tree.³ The Pepper hangeth in small clusters, three inches long, and an inch about, each cluster having fortie Pepper Cornes, it yeeldeth increase equall with Mustard Seed. They bee able to lade twentie ships yearly ; and more might, if the people were industrious and laboursome. The whole Countrey seemeth to be a Garden of pleasure. The Ayre is temperate and wholesome, having everie morn-

¹ Quedah.

² Probably Water buffaloes.

³ The *Piper nigrum*, according to Balfour, is a climbing East Indian plant, the dried unripe fruit of which constitute Black pepper. White pepper is the ripe fruit with the dark outer fleshy covering washed off.

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ing a fruitfull dew, or small raine. The Haven that goeth to the Citie of Achien is small, having but six foot at the barre. And there standeth a Fort made of stone, round without covering, battlements, or flankers,¹ low walled like a Pownd, a worse cannot bee conceived. Before this Fort is a very pleasant Road for ships, the wind still coming from the shore, a shippe may ride a mile off in eighteene fathomes, close by in four and sixe fathomes. Of Beasts, heere are Elephants, Horses, Buffes, Oxen and Goates, with many wild Hogs.

The Land hath plentie of Gold and Copper Mines, divers kinds of Gummes, Balmes, and many kinds of Druggos, and much Indico. Of Stones, there are Rubies, Sapphires, and Garnets: but I know not that they grow there. They have passing good Timber for shipping.

Mines of
Gold and
other com-
modities.

The Citie of Achien, if it may be so called, is very spacious, built in a Wood, so that wee could not see a house till we were upon it. Neither could wee goe into any place, but wee found houses, and great concourse of people: so that I thinko the Towne spreadeth over the whole land. Their houses are built eight footo or better from the ground upon posts of wood, with free passage under, the wals and covering of Mats, the poorest and weakest things in the World. I saw three great Market places, which are every day frequented as Faires with all kinds of Marchandize to sell.

Achien
Citie.

The King is called Sultan Aladin, and is an hundred yeares old, as they say, yet hee is a lustie man, but exceeding grosse and fat. In the beginning of his life he was a fisher-man: (of which this place hath very many; for they live most upon fish:) and going to the Warres with

Sultan
Aladin.

¹ Flankers (from the French *flanquer*) were the fortifications raised on the walls of a city like bulwarks, or countermures. The latter, derived from the French *contremure*, was a wall made in defence against another, opposite to the city wall.

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the former King shewed himselfe so valiant and discreet in ordering the Kings Gallies, that gaining the Kings favour, he was made Admirall of his Sea-forces, and, by his valour and discretion, the King so imbraced him that he gave him to Wife one of his nearest Kinswomen. The King having one only Daughter married her to the King of Ior, by whom shee had a sonne: this Childe was sent to Achien to bee nourished under his Grand-father, being Heire to the Kingdome; the King that now is, was now chiefe Commander, both by Land and Sea. The olde King suddenly dyed, this King tooke the protection of the Childe, against which the Nobilitie resisted, but he having the Kings force and taking oportunitie, ended the lives of more then a thousand Noblemen and Gentlemen: and of the rascall people made new Lords and new Lawes. In fine, the Childe was murthered, and then he proclaymed himselfe King by the right of his Wife. Hereupon arose great Warre betweene him and the King of Ior, which continueth to this day. These twentie yeares he hath by force held the Kingdome, and now seemeth to bee secure in the same.

His Court is from the Citie halfe a mile upon the River, having threo Guards before any can come to him, and a great Greene betweene each Guard; his house is built as the rest are, but much higher, hee sitteth where hee can see all that come to any of his Guards, but none can see him. The wals and covering of his house are Mats, which sometime is hanged with cloth of Gold, sometime with Velvet, and sometime with Damaske. Hee sitteth upon the ground crosse-legged like a Taylor, and so must all those doe that be in his presenco. He always weareth foure Cريس, two before and two behind, exceeding rich with Diamonds and Rubies; and hath a Sword lying upon his lap. He hath attending upon him fortie women at the least, some with Fannes to coole him, some with Clothes to

dry his sweat, some give him *Aquavitæ*,¹ others water: the rest sing pleasant Songs. He doth nothing all the day but eate and drinke, from morning to night there is no end of banquetting: and when his belly is readie to breake, then he eateth *Arecca Betula*,² which is a fruit like a Nutmeg, wrapped in a kind of leafe like *Tabacco*, with sharpe chalke made of Pearle Oyster-shels: chawing this, it maketh the spittle very red, draweth the *Rhume* exceedingly, and procureth a mightie stomacke: this maketh the teeth very blacke, and they be the bravoth that have the blackest teeth. By this meanes getting again his stomacke, he goeth with a fresh courage to eating. And for a Change with a Cracking Gorge, hee goeth into the River, where he hath a place made of purpose, there getting a stomacke by being in the water. Hee, his great men and women doo nothing but eate, drinke, and talke of *Venerie*. If the Poet's Fables have any shew of truth, then undoubtedly this King is the great *Bacchus*. For he holdeth all the Ceremonies of *Gluttonie*.

As in all places of Europe the Custome is by uncovering the head to shew reverence, in this place it is wholly contrary. For, before any man can come to the Kings presence, he must put of his hose and shooes, and come before him bare-legged, and bare-footed, holding the palmes of the hands together, and heaving them up above his head, bowing with the bodie, must say, *Doulat*; which done

¹ See note 1, p. 143.

² The Betel nut is the fruit of a palm, *Areca Catechu*, and is remarkable for its narcotic or intoxicating powers. It has been doubted whether this effect is due to itself or to the *piper* leaf in which it is invariably wrapped when eaten. Blume tells us that the Asiatic nations would rather forego meat and drink than the use of their favourite betel nuts. Whole ship-loads of the *Areca* nuts are annually exported from Sumatra, Malacca, Siam, and Cochin China. As they contain a large proportion of *tannin*, they are also used in some parts of India for dyeing cotton cloths.

dutie is discharged. And so hee sitteth downe crosse-legged in the Kings presence. Hee doth onely spend the time in eating with women, and Cock-fighting. And such as is the King, such are his Subjects; for the whole Land is given to no other contentment.

His State is governed by five principall men, with their inferiour officers, his Secretarie, and foure called Sabandars, with these resteth all authoritie. The Kings will is their Law. For it seemeth there is no Free-man in the Land: for the life and goods of all is at the King's pleasure. Hee will make no Offenders happie by death, but cutteth off their hands and fecto, and banisheth them to an Ile named Polowey.¹ If he put any to death, the Elephants teare him to pieces, or they drive a stake into his fundament, and so he dyeth. There are Gaoles and many fettered Prisoners that goe about the Towne.

His women are his chiefest Counsellers; hee hath three Wives, and very many Concubines, which are very closely kept.

Hee hath very many Gallies, I thinke an hundred, some that will carry foure hundred men, made like a Wherrie, very long and open, without Decke, Fore-castell, Chase, or any upper building. Their Oares are like Shovels of foure foote long, which they use only with the hand, not resting them upon the Galley. They beare no Ordnance; with these hee keepeth his Neighbours in obedience.

A woman is his Admirall, for hee will trust no men. Their Weapons are Bowes, Arrowes, Javelings, Swords, Targets; they have no defensive Armes, but fight naked.

Hee hath great store of Brasse Ordnance, which they use without Carriages, shooting them as they lye upon the ground. They be the greatest that I have ever seene, and the Mettall is reported to be rich of Gold. The trust of his land force standeth upon his Elephants.

¹ An island off the north coast of Sumatra.

These people boast themselves to come of Ismael and Hagar, and can reckon the Genealogie of the Bible perfectly. In Religion they are Mahometists, and pray with Beades as the Papists doe. They bring up their Children in Learning, and have many Schooles. They have an Archbishop and Spirituall Dignities. Here is a Prophet in Achien, whom they greatly honour; they say that hee hath the spirit of Prophesie, as the Ancients have had. He is dignified from the rest in his Apparell, and greatly inbraced of the King.

The people are generally very cunning Merchants, and wholly dedicated thereunto. Of Mechanicall Artesmen, they have Gold-smithes, Gun-founders, Ship-wrights, Taylors, Wevers, Hatters, Pot-makers, and Aquavitæ Stillers, which is made of Rice (for they must drinke no Wine), Cutlers, and Smithes.

As touching their Burials, every Generation or Kinred have their particular place to burie their dead; which is in the Fields. They lay the Corps with the head towards Mecha, having a free Stone at the head, and another at the feete, curiously wrought, thereby signifying the worthinesse of the person.

But in the place of the Kings Burials, every grave hath a piece of Gold at the head, and another at the foot, weighing at the least five hundred pound weight, cunningly imbossed and wrought. This King hath two such Peeces in making and almost finished, which wee saw, that are a thousand pound weight a piece, and shall bee richly set with stones. I did greatly desiro to see the Kings Burialls, because of the great wealth therein; but could not. I doe almost beleieve it to be true, because this King hath made two such costly monuments.

The people that trade in this place are of China, Bengala, Pegu, Java, Coromandel, Gusarate, Arabia, and Rumos. Rumos is in the Red Sea, and is the place from whence

The Turkes
are called
Rumos in

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the Indies.
The reason
of that
name is
their Metro-
politan and
Imperiall
Citie Con-
stantinople,
called New
Rome: of
which Rome
they call
them Ru-
mos. Their
tradition of
Ophir is
rather to be
marked
then this
Etymologie
and conceit
of Rumos in
the Red Sea.

Salomon sent his ships to Ophir for Gold, which is now called Achien, as by tradition they doe affirme.¹ And the Rumos people from Salomons time to this day have followed the same trade.

They have divers termes of payment, as Cashes, Mas, Cowpan, Pardaw, Tayell; I only saw two pieces of Coine, the one of Gold, the other of Lead, that Gold is of the bignesse of a penny; it is as common as pence in England, and is named Mas; the other is like a little leaden Token, such as the Vintners of London use, called Caxas. A thousand sixe hundred Cashes² make one Mas. Foure hundred Cashes make a Cowpan. Foure Cowpans are one Mas. Five Masses make foure shillings sterling. Foure Masses makes a Perdaw. Foure Perdawes makes a Tayel; so a Mas is ninepence $\frac{2}{3}$ of a Pennie.

They sell their Pepper by the Bhar, which is three hundred and three score of our pounds, for three pound foure shillings: their pound they call a Catt,³ which is one and twentie of our ounces. Their ounce is bigger then ours by so much as sixteene is bigger then ten.

The weight by which they sell Precious Stones is called Masse, $10\frac{3}{4}$ whereof make an ounce.

Once every yeare they have a custome that the King with all his Noblemen and whole pompe of his land must goe to the Church to looke if the Messias bee come, which happened at our being here. There were many Elephants, I thinke fortie, very richly covered with Silke, Velvet, and cloth of Gold: divers Noblemen riding upon each Elephant, but one

¹ See note 13, p. 130.

² The Chinese also have a coin called a *cash*, of which about 1200 go to a dollar; its value, however, fluctuates according to the market.

³ The Chinese *cattie* is equal to 18 oz. avoirdupois. A *tael* is equal to 1.333 oz., and 16 *taels* are equal to one *catty*.

Taylor, in 1630, writes:—

“Goods in and out, which daily ships doe freight,
By guesse, by *tael*, by measure, and by weight.”

Elephant above the rest was exceeding richly covered, having a golden little Castle upon his backe: this was led spare for the Messias to ride in. The King riding alone likewise in a little Castle; so they proceeded with a very solemn procession, some had Targets of pure massie Gold, others great halfe Moones of Gold, with Stremers, Banners, Ensignes, Drummes, and Trumpets, with other Musicke, very pleasing to see. Comming to the Church with great Solemnitie they at length looked in, and not finding the Messias used some Ceremonies. Then the King, comming from his owne Elephant, roade home upon the Elephant prepared for the Messias: where they end the day with feasting and all pleasing sports.

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THE DUTCH
TO THE EAST
INDIES.

The pro-
mised re-
turne of
Mahomet
expected.

The Ile is divided into foure Kingdomes—Achien, Pider, Manancabo, and Aru. Achien is the chiefest, the rest are tributarie to him. Aru holdeth with the King of Ior, and refuseth subjection. I have only heard of five principall Cities to be in this Ile—Achien, Pider, Pacem, Daia, Manancabo.

Returning to our proceedings after the slaughter of Achien; September. seeking reliefe, the tenth hereof we anchored at the lands Pulo Lotum, in sixe degrees fiftie minutes, by the Kindome of Queda: where we wated and refreshed. There were in our ship three Letters close sealed, superscribed A. B. C. which upon the death of our Baase were to be opened. By A. one Thomas Quymans was appointed our Chiefe, who was slaine at Achien. Then B. was opened, whereby Guyan Lofort, who escaped Captivitie by being the Kings Messenger, was appointed our Chiefe, whom we so received. The letter C. was not opened. The last hereof wee set sayle our course againe for Achien, with hope by some meanes to recover our men.

The sixth we came in sight of Achien; the twelfth wee October. came into the Bay, where wee found ten Gallies set out against us. Wee came up with one of them, and gave her

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THE DUTCH
TO THE EAST
INDIES.

divers shots, but in a calme under the land she escaped. The rest durst not come neere us: for they are very Cowards, proud and base.

The eightene hereof wee shaped our course for the Citie Tanasserin, for it is a place of great trade; the five and twentieth we anchored among the Ilands in the Bay, in eleven degrees, twentie minutes of the Pole Articke. Being here we were very much crossed with bad winds, so that wee could not recover the Citie, for it standeth twentie leagues within the Bay. Being in verie great distresse of victuals we departed hence, shaping our course for the Ilands Nicobar, hoping there to find reliefe.

November. The twelfth we anchored at the Ilands Nicobar in eight
Nicobar. degrees of North Latitude, where the people brought us great store of Hens, Oranges, Limons, and other Fruit, and some Ambergreece, which we bought for pieces of lincloth and Table Napkins. These Iles are pleasant and fruitfull, low land, and have good road for ships. The people are most base, only living upon fruits and fish, not manuring the ground, and therefore have no Rice. The sixteenth wee departed, shaping our course for the Ile Zeilon,¹ for wee were in great distresse, especially of Rice.

December. The sixt, by Gods great goodnesse, we tooke a ship of Negapatam, which is a Citie in the Coast of Coromandell, shee was laden with Rise, bound to Achien. There were in her threescore persons, of Achien, of Java, of Zeilon, of Pegu, Narsinga,² and Coromandel. By these people wee learned that in Zeilon there is a Citie named Matecalou, a place of great Trado, and that there wee might load our ships with Sinamon, Pepper, and Cloves. They also said that in Zeilon were great store of precious stones and Pearles: that the Countrey doth abound with all kind of Victuals, and that the King is an exceeding Enemie to the

Matecalon
in Zeilon, a
Citie of
great trade.

¹ Ceylon.

² An inland town of the province of Bengal.

Portugals; they also told us of a Citie named Trinquanamale,¹ where was the like Trade.

VOYAGE
WITH
THE DUTCH
TO THE EAST
INDIES.

So they promised to lade our ships, and royally to victuall us, for little money. Hereupon we laboured by all possible meanes to recover the said places, but could not, for the wind was exceeding contrary. Then these Indians told us that if we would stay untill January, we should have more then a hundred ships come close by that shore laden with Spicerie, Linnen-cloth, and China Commodities; besides stones and other wealth.

To stay there as a man of Warre our Governour would not agree: but to stay and in taking any thing to pay for the same he was content, for so was his Commission; to this the Company would not agree. Whereupon the eight and twentieth hereof we shaped our course homeward, having beaten sixteene dayes upon this Coast to recover Matecalou. We discharged our Prise the eighteenth hereof, having taken the best part of her Rico, for which our Chiefe payed them to their content. But the Companie tooke away the Money and Merchandise from the Indians with much disorder; we tooke with us twelve of the Indians of severall places: who, after we could a little understand them, told us that the Marchants had great store of precious stones in the ship, which they had hid under the Timbers. Of what truth that report is I know not. They would not suffer Master Tomkins nor me to goe aboard the Prise: for what reasons I know not.

Prise discharged.

1600.

The fift hereof our meate was poysoned, but God preserved us, for one tasting the same by chance or greedinesse (for it was fresh fish) was presently infected: before the meate came to us it was strongly poysoned, for our Surgeon tooke almost a spoonfull of Poyson out of one fish, but this is not the

March 1600.

¹ Trincomalee.

VOYAGE
WITH
THE DUTCH
TO THE EAST
INDIES.

first time, if the grieved would complaine. The tenth wee fell with Cape Bona Esperaza, where wee had a great storme: the sixe and twentieth wee doubled the same.

Aprill.

S. Helena.

The thirteenth we anchored at the Ile Saint Helena, which is rockie and mountanous, lying in sixteene degrees of South latitude; here wee found good water, figs, and fish in plentie: there be Goats, but hard to get. The fifteenth, at Sun-set, there came a Caravell¹ into the Road, who anchored a large Musket-shot to wind-ward of us. She was utterly unprovided, not having one Peece mounted: we fought with her all this night, and gave her, as I thinke, better then two hundred shot. In eight houres shee never made shot nor shew of regard; by midnight shee had placed sixe Peecces which she used very well, shot us often through, and slew two of our men. So the sixteenth, in the morning, we departed, having many sick men, shaping our course for the Ile Ascension, where we hope to have reliefe. This three and twentieth we had sight of Ascension, in eight degrees of South latitude; this Ile hath neither wood, water, nor any greene thing upon it, but is a fruitless greene Rocke of five leagues broad.² The foure and twentieth, at midnight, wee agreed to goe for the Ile Fernando Loronio, where wee are acquainted and know that there is reliefe sufficient. For at this Ile wee stayed ten weekes outward bound, when we could not double Cape Saint Augustine.³

II. Ascension.

May.

The sixt we arived at the Ile Fernando Loronio, where wee stayed sixe dayes to water and refresh our selves. The thirteenth we departed, shaping our course for England.

July.

The nine and twentieth of July we arrived at Middleborough.

¹ Caravel or carvel (from the Italian *Caravella*), was a light vessel, carrying a high square poop, and generally between one and two hundred tons burthen. They were, invariably, lateen rigged, though some carried square sails on the foremast.

² See note 1, p. 161.

³ See note 4, p. 133.

The second Voyage of John Davis with Sir Edward Michelborne, Knight, into the East-Indies, in the *Tigre*, a ship of two hundred and fortie Tuns, with a Pinnasse called the *Tigres Whelpe*: which, though in time it be later then the first of the East-Indian Societie, yet because it was not set forth by them, I have heere placed.¹

THE fift of December, 1604, we set saile from the Cowes in the Ile of Wight. The three and twentieth we arrived at Teneriffe, in the road of Aratana.² The fourteenth of January at night we were troubled with extreme heate, lightnings, thunder and raine all the night.

The sixteenth we passed under the Equinoctiall Line, shaping our course for the Ile Loronnah,³ the wind being at South South-east, our course South South-west; and some three degrees South-ward of the Line, we met with such multitudes of fish, as it is incredible to report, so that with our Hookes, Lines, and Harping Irons,⁴ wee tooke so many Dolphines,⁵ Bonitos,⁶ and other fishes, that our men were

¹ The account of this voyage is taken from Purchas, vol. i. The writer is unknown.

² Probably Oratava, situated on the north-west side of the island. A very insecure and dangerous anchorage, especially during the winter months. As a rule, ships only go there in the summer to take in wine.

³ The island of Fernando Noronha.

⁴ Harpoons.

⁵ The fish here alluded to does not in reality belong to the order *Delphinus*, but is the Dorado or *Coryphæna hippunis*, which throws out the most brilliant and changing colours during its death-struggle; hence the old story regarding the loveliness of the hues of the dying dolphin. The Dorado inhabits warm seas, and is deservedly appreciated for the excellence of its flesh.

⁶ The Bonito or Tunny, *Thynnus pelamys*, belongs to the scumber or mackarel family of fishes. It is much larger than the common mackarel,

DAVIS'S
LAST
VOYAGE.

Pashara-
boues.

Alcatrazzi.

The Ile of
Fernando
de Loronna.

so wearie with eating of fish, that we could not tell what to doe with it. Moreover there were fowles called Pasharaboues, and Alcatrazes. We tooke many of those Pasharaboues,¹ for it is a fowle that delighteth to come to a ship in the night; and if you doe but hold up your hand, they will light upon it. The other foule, called Alcatrazzi,² is a kind of Hawke that liveth by fishing. For when the Bonitos or Dolphines doe chase the flying fish under the water, so that he is glad to flee from them out of the water to save his life, this Alcatrazzi flyeth after them like a Hawke after a Partridge. Of these flying fishes I have seene so many flee together, that you would have thought them to be a great flocke of Birds afarro off. They are but little fishes, scarcely so big as an Hering.

The two and twentieth we came to an anker at the Ile of Loronnah,³ being foure degrees to the South-ward of the

and was a very favourite fish with the Spaniards, from whom it received the name by which it is more generally known. *Bonito*, in Spanish, signifying good.

¹ This must be the Brown Gannet, *Sula fusca*, or Booby, a well-known tropical sea-bird of the *Pelicanidae* family. It receives its name, Booby, from the mariners, on account of the easy way in which it allows itself to be caught. The word *Pasharaboue*, used in the narrative, was in all probability derived from the two Spanish words *Pajaro*, "a bird", and *Bobo*, "foolish".

² This is, doubtless, the common white Pelican, *Pelicanus oncorhynchus*, called by the Spaniards Alcatraz. These birds usually make their nests in remote and solitary islands. Columbus mentions seeing the Alcatraz as he approached America, and Drayton says:—

"Most like to that sharp-sighted *alcatraz*,
That beats the air above the liquid glass."

It appears a great stretch of the imagination to liken these birds to hawks, as is done by the historian of Michelborne's voyage. The Albatross has not unfrequently, though wrongly, been called *alcatraz* by the navigators of the sixteenth century.

³ Water is scarce at the island and cannot always be brought off on account of the heavy surf, which is as bad now, as it appears to have been when visited by Michelborne. A strong current runs to the westward. See note 5, page 133.

Line, where, in going on shore, our Skiffe was over-set, by reason of the violent breach¹ that the Sea made, at which time was drowned a Kinsman of our Generall, called Master Richard Michelburne, and all the rest were saved.

The five and twentieth, our long Boate going to fill some emptie Caske with water, came againe within the danger of that unfortunate Sea, and was over-set, and two more of our men drowned. Here wee were very much troubled in getting wood and water aboard, because the landing was so dangerous that wee were forced to pull our Caske on shore with Ropes, and so backe againe when it was filled. Not sixe dayes before we came hither, there was an Hollander here, which sent his Boat for water, which was broken all into pieces against the Rockes, and his mens braines beaten out, and their armes and legs cut from their bodies.

The sixe and twentieth, our Generall went on shore to see the Iland, and marching up and downe in the same, wee found nothing but a wild Countrey, inhabited onely by sixe Negros, which live like slaves.² In this Iland have beene great store of Goates, and some wild Oxen; but by reason the Portugall Carakes³ sometimes use to water here when they go into the East-Indies, and that these poore slaves are left there as their servants, to kill and drie Goates against their comming thither, they have destroyed both Goats and Oxen, so that wee could find but few. In this Iland are great store of Turtle-Doves, Alcatrazes, and other Fowle, which wee killed with our Pieces, and found them to be very daintie meate. Also heere is good store of Maiz or Guynie Wheat.⁴ Here are likewise plentie of

¹ See note 2, page 117.

² Davis, in his previous voyage with the Dutch in 1598, reports the existence of twelve negroes on this island—eight men and four women.

³ Carack was the name given by the Spaniards and Portuguese to a large round-built vessel, constructed especially for the Brazilian and East Indian trade. They were adapted for fighting, as well as for commerce. Hippus, the Tyrian, is credited with being the designer of this class of ship.

⁴ See note 6, p. 133.

DAVIS'S
LAST
VOYAGE.

rotten Trees, whereon groweth the fine Bombast,¹ and abundance of wild Goards, and Water-melons. When we were furnished with wood and water we came aboard.

A strange
glittering of
the Sea.

The twelfth of February, wee found ourselves to bee in seven degrees five minutes to the South-ward; in which place at night, I thinke I saw the strangest Sea that ever was seene: which was, That the burning or glittering light of the Sea did show to us, as though all the Sea over had beene burning flames of fire; and all the night long, the Moone being downe, you might see to read in any booke by the light thereof.²

¹ Sir Joseph Hooker has kindly furnished the following information regarding this plant, obtained from Mr. H. W. Moseley, who, as one of the scientific staff employed on board H.M.S. *Challenger*, visited the island of Fernando Noronha, during the recent cruise of that vessel. He says the "fine bombast" is probably a climbing *Asclepiad*, specimens of which he procured on the island, and which were subsequently forwarded to Kew. It bears large pods full of a silky substance, which might easily be mistaken for cotton. The word "fine", he conjectures, may indicate the silky and delicate appearance of the substance. The plant was found growing on living trees, with plenty of gourds similar to those referred to in the text. He suggests that the rotten trees alluded to are, possibly, the abundant *Jatropha gossypifolia* which in the dry season, are devoid of leaves, and therefore conspicuous amongst the foliage of the other trees, by their dead and withered appearance. Both water-melons and marsh-melons were found by Mr Moseley growing abundantly on the island.

² Darwin, in his exceedingly interesting narrative entitled *A Naturalist's Voyage round the World*, ascribes this peculiar phosphorescent condition of the sea to be "the result of the decomposition of the organic particles, by which process (one is tempted almost to call it a kind of respiration) the ocean becomes purified". This conclusion is based upon the fact that when this phenomenon was observed, the water was in an impure state, charged with gelatinous particles, and that the luminous appearance was produced "by the agitation of the fluid in contact with the atmosphere". The particles were so minute that, although many were visible to the naked eye, they were easily passed through fine gauze.

His description of this peculiar appearance of the sea, as first witnessed by himself, fully confirms the account given above in the narrative, more especially as it was observed in the same locality. He says, at

The thirteenth day in the morning, we described an Island, or rather indeed a Rock. The name is Ascension, the height eight degrees thirtie minutes to the Southward.¹

The first of April, toward night, we described Land from April. the maine top, which bare off us South South-East, when according to our reckoning and accounts, we were not neerer by fortie leagues, but yet the variation of the

page 162:—"While sailing a little south of the Plata, on one very dark night; the sea presented a wonderful and most beautiful spectacle. There was a fresh breeze, and every part of the surface, which during the day is seen as foam, now glowed with a pale light. The vessel drove before her bows two billows of liquid phosphorus, and in her wake she was followed by a milky train. As far as the eye reached, the crest of every wave was bright, and the sky above the horizon, from the reflected glare of these livid flames, was not so utterly obscure as over the vault of the heavens.

"The water, when placed in a tumbler and agitated, gave out sparks; but a small portion in a watch-glass scarcely ever was luminous.

"On two occasions, I have observed the sea luminous at considerable depths beneath the surface. Near the mouth of the Plata, some circular and oval patches, from two to four yards in diameter, and with defined outlines, shone with a steady, but pale, light; while the surrounding water only gave out a few sparks. The appearance resembled the reflection of the moon, or some luminous body; for the edges were sinuous from the undulations of the surface. Near Fernando Noronha the sea gave out lights in flashes. The appearance was very similar to that which might be expected from a large fish moving rapidly through a luminous fluid. The phenomenon is more common in warm than in cold countries, and I have sometimes imagined that a disturbed electrical condition of the atmosphere was most favourable to its production. Certainly, I think the sea is most luminous after a few days of more calm weather than ordinary, during which time it has swarmed with various animals."

¹ This is incorrect. The latitude of the Island of Ascension is 7° 55' S. The island is a volcanic rock, although Green Mountain, 2,800 feet above the level of the sea, is covered with a rich vegetation. The summit of this mountain is frequently enveloped in clouds and vapour, but rain seldom falls there. Turtles are abundant on the island, and are strictly preserved by Government. Ascension is now a great naval rendezvous for the squadron on the west coast of Africa.

DAVIS'S
JANT
VOYAGE.

Compassee did tell us that wee were on Land thirtie leagues before we saw Land.

The second day, in the morning, we were hard by the shore, which was ten or twelve leagues to the North-ward of the Bay of Saldannah.

The third day, we sayled by a little Iland, which Captain John Davis tooke to be an Iland, that standeth some five or six leagues from Saldannah. Whereupon our Generall, Sir Edward Michelburne, desirous to see the Iland, took his Skiffe, accompanied with no more then the Masters Mate, the Purser, and my selfe, and foure men that did row the Boat, and so putting off from the Ship wee came on land; while wee were on shore, they in the Ship had a storme, which drave them out of sight of the Iland; and wee were two dayes and two nights before wee could recover our Ship. Upon the said Iland is abundance of

Conie Iland. great Conies, and Seales, whereupon we called it Cony Iland.¹

The eighth day, we came to an Anchor in the Road of Saldannah.²

They land
in the Road
of Saldan-
nah.

The ninth wee went on shore, finding a goodly Countrey, inhabited by a most savage and beastly people as ever I thinke God created.

In this place wee had excellent good refreshing: in so much that I thinke the like place is not to be found among savage people. For wee neither wanted Beefe, Mutton, nor Wilde-Fowle all the time we lay there.

This Countrey is very full of Oxen and Sheepe, which they keepe in great Heards and Flocks, as we do our Cattle in England. Moreover, it doth abound with store of wild Beasts and Fowles, as wild Deere in great abundance, Antelops, Babions,³ Foxes, and Hares, Ostriches, Cranes, Peli-

¹ Dassen, or Coney, Island, in latitude 33° 26' S., is about eight leagues south of Saldanha Bay.

² See note 4, page 134.

³ *Baboons*. Drayton in his "Man in the Moon", says:—

"The nimble *Babion* mourning all the time,
Nor eats betwixt my waning and my prime."

cans, Herons, Geese, Duckes, Phesants, Partridges, and divers other sorts of excellent Fowles. Of which Fowles wee killed great store with our Pieces. It is also most pleasantly watered with wholesome springs, which have their beginning from the tops of exceeding high Mountaines, which, falling into the Vallies, make them very fruitfull. Also there is a kind of Trees, not much unlike to Bay Trees, but of a farre harder substance, that grow close by the Sea side. The people of the Countrey brought us more Bullockes and Sheepe then wee could spend all the time wee stayed there, so that we carryed fresh Beefe and Mutton to Sea with us. For a piece of an old yron Hoop, not worth twopence, you might buy a great Bullocke, and for a piece of yron, not worth two or three good Horse Nayles, you might buy a Sheepe. They goe naked, save onely they weare upon their shoulders a Sheepe skin, and before their privities a little flap of a skin, which covereth as much as though they had none at all before them. In the time of our being there they lived upon the guts and filth of the meate which we did cast away, feeding in most beastly manner, for they would neither wash nor make cleane the guts, but take them and cover them over with hote ashes, and before they were through hote they pulled them out, shaking them a little in their hands, and so cate both the guts, the excrements, and the ashes. They live upon raw flesh, and a certaine kind of roote which they have, which groweth there in great abundance. In this place we lay on shore from the ninth of April until the third of May. By which good recreation and refreshing wee found ourselves in as good health as when wee put to Sea at the verie first.

Their women, some are well featured. Some of their men have but one stone. Copper is now in grentest request with them.

A certaine kind of roote

The seventh of May wee were South off the Cape of Bona Esperanca, by estimation tenne leagues. This night we passed over the shoalds of Cape Das Aguilhas.¹

The Cape de Bona Esperanza.
Cape Das Aguilhas.

The ninth day rose a mightie storme, at which time we

¹ See note 2, p. 136.

DAVIS'S
LAST
VOYAGE.

The Lion of
the Sea.

Corpo
Sancto.

lost sight of our Pinasse, being driven by violence of weather from her. This storm continued for the space of two dayes and two nights most fearefull and dangerous, with raine, lightning, and thunder, and often shipping of much water. The Portugals call this place The Lion of the Sea, by reason of the extreame fury and danger which they find in doubling of this Cape. In the extremitie of our storme appeared to us in the night, upon our maine Top-mast head, a flamo about the bignesse of a great Candle, which the Portugals call Corpo Sancto, holding it a most divine token that when it appeareth the worst is past. As, thanked be God, we had better weather after it. Some thinke it to be a spirit: others write that it is an exhalation of moyst vapours that are ingendred by foule and tempestuous weather. Somo affirme that the Ship is fortunate whero it lighteth, and that shée shall not perish. It appeared unto us two nights together, after which time we had a faire wind and good weather.¹

¹ These balls of electric light are frequently observed during a thunder storm, flickering about the mast-heads and yard-arms of vessels. They are sometimes called, by seamen, *Compasant*, the word being a corruption of *cuervo santo*, the name given to this electric phenomenon by the Spanish mariners of old, who imagined that the lights were sure indications of the presence of their guardian saint and patron, St. Elmo. They are also called St. Elmo Lights. Pliny mentions them as being noticed by the Romans, playing about their vessels, a circumstance to which Seneca also makes allusion. Clavijo, in the year 1403, during his voyage from Cadiz to Constantinople, relates the following appearance of these lights:—"During the tempest, the captain caused the litanies to be sung, and everyone sought mercy from God. The prayers being concluded, and the tempest still raging, a bright light appeared on the mast head of the carrack, and another light was seen on the bowsprit, which is that part of the ship ahead of the forecastle, and another on the yard arm, which is over the poop; and all who were on board the carrack saw these lights, for they were called up to see them, and remained some time to see if they would disappear, but they did not cease to shine during the storm, and presently all those on board went to sleep, except the captain and certain mariners, whose duty it was to

The twenty-fourth, the *Ilo De Diego Roiz*,¹ standing in the Latitude of nineteen degrees and fortie minutes to the South-ward, and in the Longitude of ninetie-eight degrees

DAVIS'S
LAST
VOYAGE.

The *Ilo de
Diego Roiz*
in 19 de-
grees 40
minutes.

keep watch. The captain and two mariners, who were awake, heard the voices of men in the air, and the Captain asked the mariners if they heard that noise; they replied that they did; and all this time the tempest did not abate. Soon afterwards they again saw those lights, returned to the places where they had been before; so they awoke the rest of the crew, who also saw the lights, and the Captain told them of the voices he had heard. These lights remained as long as it would take to say a mass, and presently the storm ceased."

In the narrative of the second voyage of Columbus, written by his brother Ferdinand, this electrical display is thus alluded to:—"On the same Saturday, in the night, was seen St. Elmo, with seven lighted tapers, at the topmast. There was much rain and great thunder. I mean to say that those lights were seen which mariners affirm to be the body of St. Elmo, on beholding which they chanted many litanies and orisons, holding it for certain that in the tempest in which he appears no one is in danger."

Pigafetta also, in his account of Magellan's Voyage in 1519, says:—"During these storms the body of St. Anselme appeared to us several times; amongst others, one night that it was very dark on account of the bad weather, the said saint appeared in the form of a fire lighted at the summit of the mainmast, and remained there near two hours and a half, which comforted us greatly, for we were in tears, only expecting the hour of perishing; and when that holy light was going away from us it gave out so great a brilliancy in the eyes of each that we were near a quarter-of-an-hour like people blinded, and calling out for mercy. For without any doubt nobody hoped to escape from that storm. It is to be noted, that all and as many times as that light which represents the said St. Anselme shows itself and descends upon a vessel which is in a storm at sea, that vessel never is lost. Immediately that this light had departed the sea grew calmer."

St. Erasmus was Bishop of Naples. The Italians called him St. Eremo. The name got corrupted into Santermo, which the Spaniards converted into St. Elmo. He was especially the patron saint of those sailors who navigated along the shores of the Mediterranean Sea. He was one of the bishops of the early church who suffered martyrdom during the persecution of the Christians under Diocletian and Maxi-

¹ Rodriguez Island is situated in lat., 19° 40' S., and long., 62° 45' E.

DAVIS'S
LAST
VOYAGE.

and thirtie minutes, bare North off us about five of the clocke, eight leagues off. Wee bare roome¹ to have landed, but the wind grew so stiffe in the night that we altered our determination. About this Iland we saw great store of white Birds,² having in their tayles but two long feathers. These Birds and divers others accompanied us with such contrary winds and gusts that wee often split our sayles, and, boulting to and againe, we rather went to the Lee-ward then gained anything, the wind blew so stiffe at the East South East.

June 3.

The Ile of
Diego Roiz
is a verie
dangerous
place.

The third day of June, standing our course for the Ile De Cirno, we descried the Ile De Diego Roiz againe, and bare roome with it, thinking to have stayed there to attend a good wind: but finding it to be a very dangerous place, wee durst not come to an anchor there for feare of the rockes and sholds that lye about it; and upon better consideration wee altered our purpose and stood for East-India.

The Ilas Dos
Banhos.

The fifteenth of June we had sight of Land, which was the Ile Dos Banhos,³ in sixe degrees and thirtie-seven minutes to the South-ward, and in one hundred and nine degrees of Longitude. These Ilands are falsely laid in most

mian. In the earliest navigation book, the "Arte de Navegar", by Martin Cortes, which was published at Seville in 1551, there is a curious chapter on the St. Elmo lights, entitled: "De la eralacion relumbrante que p-ece en las tempestades que los marineros llaman Santelmo," *cap. xx.* See Appendix, page 347. St. Anselme, mentioned by Pigafetta, is in all probability meant for St. Elmo.

¹ See note 3, page 113.

² The Common Tropic Bird (*Phaeton æthereus*). It is seldom these birds are met with many degrees beyond the tropics, and they are rarely, if ever, seen to settle on the water, usually returning at night to roost on trees or rocks. Their long tail feathers are much esteemed by the natives as ornaments of dress.

³ The northernmost Island of the Chagos Archipelago. This group, with Mauritius and other islands adjacent, came into the possession of England at the termination of the French war in 1814. They extend from lat. 7° 39' S. to lat. 4° 44' S., and lie between 70° 55' and 72° 50' East longitude.

DAVIS'S
LAST
VOYAGE.

Charts, lying too much to the West.¹ Here we sent our Boats to see if they could find any good ground to anchor in. But searching both the South and West Shore they could find none. There are five of these Ilands. They abound with Fowle, Fish, and Coco Nuts. Our Boats went on shore and brought great store of them aboard us, which wee found to be excellent meate. Seeing wee could find no good anchoring, by reason that in some places close under the shore it was so deepe that wee could find no ground, and in other places were such sharpe rockes and sholds that wee durst not anchor; having but bad and contrario winds, we left these Ilands, and stood our course as neere as we could lye for India.²

Their
Boats goe
on shore.

The nineteenth of June we had sight of Land, which was the Ile of Diego Graciosa,³ standing in the Latitude of seven degrees thirtie minutes South-wards, and in Longitudo one hundred and ten degrees fortie minutes by our accounts. This seemeth to be a very pleasant Iland, and of good refreshing if there be any place to come to an anchor.

The Ile of
Diego
Graciosa.

Wee sought but little for anchoring there because the wind was bad, and the tide forced us to the shore, so that we durst not stay to search there any further. This Iland seemeth to bee some ten or twelve leagues long, abounding with Birds and Fish; and all the Iland over seemeth to be a mightie Wood, of nothing else but Coco-trees. What else this Iland yeeldeth we know not.

The eleventh of July wee passed againe the Equinoctiall Line, where wee were becalmed with extreame heate, lightning, and thunder.

July.
They passe
the Equi-
noctiall
Line.

¹ In all probability the charts of the time were correct, for the writer has given the positions of these places as more than 30° too far to the Eastward.

² This is unintelligible, for the course from Ile Dos Banhos to Diego Garcia, would be almost due South, and therefore in the *opposite* direction to India.

³ Diego Garcia is the southernmost Island of the Chagos Archipelago.

DAVIS'S
LAST
VOYAGE.

An Island or
Ilands in
two degrees
of Northerly
Latitude,
adjoyning
to Sumatra.

The nineteenth we descried Land, which was many Ilands, as we thought locked in one, which lay under the high Land of the great Iland of Sumatra. Here we sent off our Boat to get some fresh water; but the Sea went with such a violent breach¹ upon the shore, that they durst not land. The people of this Iland made great fires also along the shore, with intent, as we thought, to have had us come on Land. This Iland or Ilands is in two degrees of Northerly Latitude.

The five and twentieth we came to an anchor by a little Iland, where we sent our Boat on shore for water; but finding none, they returned with some Coco Nuts, affirming that the Iland was very full of Coco Trees, which had very few Nuts upon them. We saw three or foure people upon this Iland, but they went away and would not come neere us. Those people we imagined to be left there to gather the Cocos, and to make them readie against others should come and fetch them.

The Ile of
Bata.

The sixe and twentieth we came to an anchor within a league of a great Iland called Bata,² lying in twentie minutes of South Latitude. Here we builded up our Shalop,³ and named her the Batte. In this Iland are none Inhabitants: it doth exceedingly abound with wood and fresh water Rivers, as also with Fish, Munkies, and a kind of Fowle, which they affirme to bee that Countrey Batto,⁴ whereof in

¹ See note 1, page 118.

² Batu Island, on the west coast of Sumatra.

³ Shallop or Shalop (derived from the French *chaloupe*) was a small light vessel usually carrying a couple of masts, and fitted with lug sails. They were often used as tenders to men-of-war. Sometimes a small boat, rowed by one or two men, was called a Shalop. From this name is derived the word Sloop, signifying a small vessel.

⁴ Although this animal is here called a bat, from the description given it can be no other than the Taguan Flying Squirrel, *Pteromys Petaurista*. The "two great flaps of skin", alluded to above, are a parachute-like extension extending along the sides of the animal, of a

our time of being there I killed one, which was greater than an Hare, and in shape very like a Squerrill, save onely from each of his sides did hang downe two great flaps of skin, which, when hee did leape from tree to tree, hee would spread forth like a paire of wings, as though hee did seeme to flie with them. They are very nimble, and will leap from bough to bough oftentimes, taking hold with nothing but their tayles. Because our Shalop was builded in the kingdome of these beasts, she was called after their name, The Bat.

DAVIS'S
LAST
VOYAGE.

A great
flying
Squirrel or
Bat.

The nine and twentieth day, travailing along the shore in this Iland, I discovered a Roder,¹ riding under a little Iland about foure leagues from mee, which made mee very glad, hoping it had beene our Pinnasse, which wee lost in the great storme, neere under the Cape of Bona Esperança; with which newes, by night, I gate aboard our Generall; who in the morning sent mee, with Captaine John Davis, to see if wee could find her. But when wee came to the place, wee found three Barkes riding under the Iland. They made signes unto us to come aboard them, and told us they had Hennes; wee answered them that wee would goe fetch some money, and would come againe the next morning and buy. Some of them understood Portuguse. Wee durst not goe aboard them, because wee were but evill provided. The next morning, being better furnished, we went, thinking to have some better commodities of them; but they had weighed anchor, and were all gone. It seemed they were afraid of us, by their hasting away.

Three
Barkes.

The fourth of August we weighed anchor, and stood for August. Priaman.²

delicately thin substance, and covered with hair on both its surfaces. When the creature makes one of its marvellous springs, it stretches its four limbs to their fullest extent and is up-borne in the air by this parachute-like contrivance.

¹ See note, p. 75.

² A town on the west coast of the Island of Sumatra.

DAVIS'S
LAST
VOYAGE.

The ninth of August our Generall manned the Shalop, and sent us along the Coast, to see if we could find any Roaders, and espying a Sayle, we gave her chase, which, when shee perceived shee could not goe from us, shee came to an anchor, and forsooke their Barke, and rowed all on shore to an Iland in a small Boat, where wee could not come at them. Wee laid there Barke aboard, not finding any one man in it; the chiefe lading was Cocos Oyle, Nuts, and fine mats. But seeing it was such meane stuffe, and knowing that if we should have taken it, our General would not have liked of it, wee left her, not taking any thing from her worth the speaking of.

Tico, a
Towne in
Sumatra.

The tenth and cleventh dayes we stood close along the maine land, whereas we espied eight Prawes,¹ riding over against a place called Tico. Which whē we first espied, we were in good hope that we might find our Pinnasse among them. When we came up with them she was not there; but they put us in comfort, telling us there was an English Ship at Priaman, which was not past sixe leagues from this Towne of Tico. Then, standing out to Sea we saw our Admiral, and in short time got aboard, telling our Generall the newes. Wee had not sayled a league further, but our Ship came on ground upon a Rocke of white Corral; but, God be thanked, having a great gale, in very short time we got her off againe, without any hurt at all: And coming neere unto the Road of Priaman, we descried our Pinnasse to be there, which wee had lost so long before in the great storme, in doubling the Cape of Bona Esperança. The Captaine and Master of the Pinnasse met us halfe a league from the Road in their Skiffe, and at our comming aboard of us, our Generall did welcome them with a peale of great

Their ship
cometh on
the ground.

They meet
with their
Pinnasse,
which they
had lost so
long before.

¹ Prah is the Malay word for a boat. The larger Malay war vessels were over 150 feet in length and would carry 100 rowers, besides about 60 fighting men, and from 6 to 10 brass guns. The Prahus were remarkable for their swiftness.

Ordinance. And after many discourses passed of what had happened in the time of each others absence, wee came to an anchor in five fathoms water, very good ground, in the Road of Priaman, which standeth in fortie minutes of Southerly Latitude.

DAVIS'S
LAST
VOYAGE.

Priaman in
fortie
minutes of
Southerly
Latitude.

The fourteenth, our General sent mee on shore with a Present to the Governor and to others, to see what price Pepper was at, and to buy fresh victualls, and to know whether our men might come safely on shore. But when we came on shore, the Governor durst not speake with us privately, by reason of certaine warres that were among them: by which meanes they were growne jealous one of another.

These warres grew upon this occasion.

The King of Achen having two sonnes, hee kept the eldest at home with him, to succeed him after his death, and the youngest he made King of Pedir:¹ whereupon the eldest sonne tooke his father prisoner, affirming that he was too old to govern any longer, and afterward made warre upon his younger Brother.²

Thus, seeing little good to be done in this place, having refreshed our selves with fresh victualls, we resolved to depart from thence.

The one and twentieth, we weighed anchor, and stood for Bantam,³ on which day we tooke two Prawes, having nothing in them but a little Rico. The one of these Prawes hurt two of our men very sore after they had entred her. For our men thought, because they saw some leap over-board, they had all leaped over-board; but they were deceived. For the first two men that entred were sore hurt by two which

¹ A town on the north coast of Sumatra.

² See, in Davis's previous voyage, page 148, his account of the manner in which the King of Achin had taken possession of the throne. *There is a great discrepancy between the two accounts.

³ A town situated at the N.W. extreme of the Island of Java.

DAVIS'S
LAST
VOYAGE.

lay close hidden behind their Sayle; who as soone as they had wounded them most desperately leaped over-board, swimming away like water Spaniolls. So taking such things as best fitted us, wee left their Prawes, doing them no further harmo.

The three and twentieth, wee tooke a Fisher-boat, having nothing of value in him, letting him goe without any hurt, saving onely one of them was shot through the thigh at the first meeting, when they resisted us.

The five and twentieth, wee descried a Sayle, and sent our Shalop, Long-boat, and Skiffe to see what she was; for our Ship and Pinnasse could not fetch her up, because they were becalmed. These boats comming up with her, bid him strike sayle, but shee would not. So wee fell in fight with her, from three of the clocke in the afternoone till ten of the clocke at night, by which time our Pinnasse had gotten up to us: then shee strooke her sayles and yeelded. So wee made her fast to our Pinnasse, and towed her along with us all night. In the morning our Generall sent for them to see what they were; and sent three of us to see what she was laden withall. When hee had talked with them, they told him they were of Bantam; wherefore knowing not what injurie he might doe to the English Merchants that had a Factorie in Bantam at that present; and understanding by us that their loading was Salt, Rice and China dishes,¹ hee sent them aboard their owne Barke againe, not suffering the worth of a penny to bee taken from them.

A ship of
Bantam
taken and
freely dis-
missed.

They standing toward Priaman, and we toward Bantam, left each other. This Barke was of the burthen of some fortie Tuns.

They take a
ship of Guz-
arate.

The second of September we met with a small ship of Guzarate, or Cambaya, being about eightie Tuns; which Ship wee tooke and carried into the Road of Sillibar,²

¹ See note 3, p. 80.

² On the west coast of Sumatra.

standing in foure degrees of Southerly Latitude ; into which Road many Prawes continually come to refresh themselves. For here you may have Wood, Water, Rice, Buffles-flesh,¹ Goates, Hens, Plants, and Fresh fish, but all very deere.

DAVIS'S
LAST
VOYAGE.

Sillibar in
foure de-
grees of
Southerly
Latitude.

The eight and twentieth day, having despatched all our businesse, wee weighed anchor, and stood for Bantam.

The three and twentieth of October, wee came to an anchor in the Road of Marrah,² being in the straight of Sunda ; heere we tooke in Fresh-water. In this place are great store of Buffles, Goates, Hens, Duckes, and many other good things for refreshing of men. They esteeme not so much of money as of Calicut clothes, Pintados,³ and such like stuffes. The people being well used, will use you well ; but you must looke to them for stealing ; for they thinke any thing well gotten that they can steale from a stranger.

October.

The Road of
Marrah.

The eight and twentieth we weighed anchor, and stood for Bantam, which standeth in sixe degrees and fortie minutes of Southerly Latitude. This day we came within three leagues of the Towne, where wee came to an anchor all night. Here wee thought to have scene the English Fleet, but it was gone for England three weekes before we came. Neverthelesse, those that remained in the Countrie, as Factors of our Nation, came aboard us, being very glad to see any of their Country-men in so forraigne a place, and withall told our Generall that the company of the Hollanders Ships that were in the Road had used very slanderous reports of us to the King of Bantam : The effect whereof was, That wee were theeves and disordinate livers, and such as did

The twentieth
eight.

Bantam.

¹ Buffalo flesh.

² Pulo Marra, a small inhabited island off the west coast of Sumatra, situated in 1° 13' S. lat. Fair anchorage and good water can be obtained there.

³ Pintados were coloured, or printed, chintzes manufactured in India. They were formerly in great demand and were among the most valuable goods of a ship's cargo.

DAVIS'S
LAST
VOYAGE.

come for nothing but to deceive them, or use such violence as time would give us leave to execute; and that we durst not come into the Road among them, but kept two or three leagues from thence for feare of them. After our Generall had heard this report, it so mooved him that hee weighed anchor, sending the Hollanders word that hee would come and ride close by their sides, and bad the prowdest of them all that durst to put out a Piece of Ordnance upon him; and withall sent them word if they did goe about either to brave or to disgrace him or his Country-men hee would either sinke them, or sinke by their sides. There were of these Hollanders five Ships, the one of them of seven or eight hundred Tuns, the rest of a farre smaller burthen. But of this messago (notwithstanding we came and anchored close by them) we never had answer.

But whereas the Hollanders were wont to swagger and keepe great sturre on shore all the time before our being there, they were so quiet that wee could scarcely see one of them on Land.

The second
of Novem-
ber they
depart from
Bantam.

Pedra
Branca.

Three
Prawes.

The second of November, having seene our Countrey-men, wee tooke our leave, and stood our course for Patane. And in our way, as wee sayled betweene the Chersonesus of Malacca and Pedra Branca,¹ wee met with three Prawes, which, being afraid of us, anchored so neere unto the shore that we could not come neere them, either with our Ship or Pinnasse. Wherefore our Generall manned his Shalop with eightene men and sent us to them, to request them that for his money he might have a Pilot to carrie his Ship to Pulo Timaon,² which is about some five dayes sayling from the place where wee met with them. But they seeing our Ship and Pinnasse at anchor about a mile from them, and that they were not able to come any neerer them, told us plainly that none of them would goe with us, and, being

¹ Pulo Banca. The large island of Banca.

² An Island off the east coast of the Malay peninsula.

DAVIS'S
LAST
VOYAGE.

at anchor, weighed and were going away: Seeing that, we began a fight with them all three: one of them we tooke in lesse than halfe an hour, whose men, which were seventie-three in all, gate out of her and ranne on shore. The other fought with us all night, and in the morning, about the breake of day, shee yeilded unto us. Our Generall came to us in his skiffe a little before shee yeilded.

Two Prawes
taken.

They were laden with Benaiman,¹ Storax,² Pepper, China Dishes, and Pitch.³ The third Praw got from us while wee were fighting with the other. Our Generall would not suffer us to take anything from them, but only two of their men to Pilote us to Pulo Timaon, because they were of Java. These people of Java are very resolute in a desperate case. Their chiefe Weapons are Javelings, Darts, Daggers, and a kind of poysoned Arrowes, which they shoote in Trunkes. They have some Harcubushes,⁴ but they are nothing expert in using them. They also have Targets. The most part of them be Mahumetans. They had beene at Palimbang,⁵ and were going backe againe to Greece,⁶ a Port Towne on the North-East part of Java, where they dwelled.

Poysoned
Arrowes
shot in
Trunkes.

Palimbang.
Greece, a
Towne in
Java.

The twelfth of November we dismissed them, standing our course toward Patane.

¹ *Benzoin* or *Benjamin* is the balsam obtained from a tree cultivated in Sumatra and Borneo, the *Styrax Benzoin*.

² The produce of a tree, *Styrax officinale*, growing in the south of Europe, and in the Levant. It belongs to the natural order *Styracææ*. *Storax* has a fragrant odour and a pleasant aromatic taste.

³ Pitch was an oily bituminous substance drawn from fir trees. Manufactured pitch is tar and resin boiled into a fluid, yet highly tenacious, consistency. The former must have been the pitch here alluded to as being a portion of the prahu's cargo.

⁴ *Arquebus*, sometimes called *Hagbut*, was a hand gun somewhat larger than a musket. It carried a ball of about $3\frac{1}{2}$ ounces weight, and was more generally used in loop holes of fortresses where the piece could have a rest.

⁵ *Palembang*, a town situated on a river in the south-eastern part of Sumatra, 60 miles from the sea.

⁶ *Gressie*, in Surabaya.

DAVIS'S
LAST
VOYAGE.

Certain
Ilands.

The sixe and twentieth of November we saw certain Ilands bearing off us North-west, which neither we nor our new Pilots knew. But having a very contrary wind to stand our course for Patane, we thought it very necessary to search those Ilands for wood and water, hoping by that time we had watered to have a better wind.

The broken
Lands neere
the Ile of
Bintam.

The seven and twentieth we came to an Anchor within a mile of the shore, in sixteene fathomes good ground, on the South-side of these Ilands. Heere, sending our Boat on shore, wee found some of them to bee Sunken Ilands, nothing above the water but the Trees, or Rootes of them. In one of them wee found a reasonable good watering place, and all the Ilands a Wildernesse of Woods. It is a very uncomfortable place, having neither Fruits, Fowle, nor any kind of Beast wherewithall to refresh men. These Ilands we tooke to bee some of the broken Lands lying South-east from the Ile of Bintam.¹

December.

The second of December, having taken in wood and water, we weighed Anchor, standing our course for Patane, as neere as a bad wind would give us leave. For wee found the wind in these monethes to be very contrarie, keeping still at North, North-west, or North-east.

Pulo Laor.

The twelfth day, neere unto Pulo Laor², wee descryed three sayles, and sending our Pinnasse and Shalop after one of them, being the neerest unto us, we stayed with our ship, thinking to have met with the other two: but in the night they stood away another course, so that we saw them no more. In the morning we descryed our Pinnasse and Shalop about foure leagues to Leeward, with the other ship which they had taken. The wind and current being against them they were not able to come up to us: we seeing that went to them. When wee came wee found her to be a Juncko of Pan-Hange, being in burden above an hundred Tunnes,

Another
ship taken.
Pan-Hange.

¹ One of a group of islands east and south of Singapore.

² A small Island off the coast of the Malay peninsula.

laden with Rice, Pepper, and Tinne, going to Bantam, in Java. Our Generall not esteeming any such meane luggage, tooke as much Rice as served for his provision, and two little brasse Gunnes, and payed them royally for all, not taking anything else from them, save only one man to be our Pilot to Patane,¹ who was willing to come along with us when he saw our Generall use them so well. The other two Pilots which wee tooke before out of one of the three Prawes were unskilfull men. Wherefore, our Generall rewarding them for the time that they had beene with him, sent them backe againe into their owne Countrey by the Juncke which wee tooke that was going to Java.

The thirteenth day we left her, standing our course for Pulo Timaon,² joyning on the King of Pan-Hange,³ his Countrey. Here we were troubled very much with contrarie winds and currents. For the Sea runneth alwayes from the beginning of November to the beginning of Aprill to the South-ward, and from Aprill to November backe againe to the North-ward. The wind also in the aforesaid first five monethes is most commonly Northerly, and in the other seven moneths Southerly. All the ships of China, Patane, Jor,⁴ Pan-Hange, and other places which are to the North-ward, come to Bantam or Palimbam⁵ when the Northerly

Pulo
Timaon
over against
Pan-Hange.

The
Monsons in
these parts.

¹ Patani is the most northern Malay State on the east side of the peninsula, opposite to Quedah on the west side.

² Pulo Timoan, or Tioman, is the largest of a chain of islets on the east coast of the Malay peninsula, with hills 3,400 feet high. Lat. 2° 44' to 2° 52' N.

³ Pan-Hange, as appears further on, is intended for the Malay State of Pahang on the eastern side of the peninsula. The correct form is Pääng. The Portuguese have Pam. It is bounded on the south by Johore, and by Tringano on the north. It extends eighty miles along the coast, and the country is mountainous, with peaks over 3000 feet high. The whole coast is very beautiful and picturesque. See Thomson's *Journal of the Indian Archipelago*, v, p. 147.

⁴ Johore.

⁵ Palembang.

DAVIS'S
LAST
VOYAGE.

In three
weeks hee
could not
get one
league a
head.

Cape
Tingeron.

Monsoin¹ is come: and returne backe againe when the Southerly Monsoin commeth: which Monsoins come in the monethes before mentioned. This being observed, you shall have both wind and tyde with you. Here, as I said before, I found such contrary violent winds and currents that I could not in three weekes get a league ahead. This Countrey of Pan-Hango is a very plentifull Countrey, and full of Gentry, after the fashion of those Countries, store of shipping, and victuals very cheape. This Countrey lyeth betweene Jor and Patane, and reacheth on the Sea-Coast to Cape Tingeron,² beeing a very high Capo, and the first Land-fall that the Caracks of Macao, or Juncks of China, or Camboia Prawes doe make as they come for Malacca, Java, Sumatra, Jumbe, Jor, Palimbam, Grece,³ or any other parts to the South-ward.

Here, as I stood for Patane about the twentie seven of December, I met with a Juncke of the Japons which had been pyrating along the coast of China and Camboia. Their Piloto being dead, with ignorance and foule weather they had cast away their ship on the sholds of the great Iland Borneo; and to enter into the Countrey of Borneo, they durst not: for the Japons are not suffered to land in any Port in India with weapons: being accounted a people so desperate

¹ Monsoon, from the Persian word *Monsum*, a season. They are periodical winds, blowing with great regularity in certain latitudes, and are caused by the unequal heating of land and water; they occur in the tropics where the "trade wind" would constantly blow if it were not for the presence of land. They blow for 5 or 6 months from one direction, and then (after the tempestuous tumult of their shifting has subsided) alter their course and blow from an opposite point of the compass, during an equal space of time, with the same uniformity. They blow more steadily in the East Indian Seas than in any other part; also in the China Sea, but with somewhat less regularity in the Northern part of it.

² Tingeron or Tingoram river and promontory, in lat. 4° 50' N., on the east side of the Malay peninsula, in the country of Tringano.

³ Gressie, a district of the province of Surabaya in Java.

and daring that they are feared in all places where they come.

These people, their ship being splitted, with their Shalops entred this Juncke wherein I met them, which was of Patane, and killed all the people save one old Pilot. This Juncke was laden with Rice, which, when they had possessed and furnished with such furniture, necessaries, and armes as they saved out of their sunken shippe, they shaped their course for Japon; but the badnesse of their Juncke, contrarie winds, and unseasonableness of the yeare forced them to Leeward: which was the cause of mine unluckie meeting them.

After I had haled them, and made them come to Lee-ward, sending my Boat aboard them, I found them by their men and furniture very unproportionable for such a ship as they were in; which was a Juncke not above seventie tunnes in burthen, and they were ninotie men, and most of them in too gallant a habit for Saylers, and such an equalitie of behaviour among them that they seemed all fellowes: yet one among them there was that they called Capitaine, but gave him little respect. I caused them to come to an Anchor, and upon further examination I found their lading to be only Rice; and for the most part spilt¹ with wet, for their ship was leake both under and above water. Upon questioning with them I understood them to be men of Warre that had pillaged on the Coast of China and Camboia, and, as I said before, had cast away their ship on the sholds of Borneo.

Here wee rode at Anchor under a small Iland, neere to the Ile of Bintam,² two dayes, entertayning them with

¹ Spoilt?

² Bintang, east of Singapore. It is the largest of a cluster of islands between the Malay peninsula and Sumatra, at the eastern extreme of the Malacca Strait. A mountain chain runs through it with peaks 1400 feet high. The settlement of Rhio is on the island of Bintang.

DAVIS'S
LAST
VOYAGE.

good usage, not taking anything from them: thinking to have gathered by their knowledge the place and passage of certaine ships on the Coast of China to have made my Voyage. But these Rogues being desperate in winds and fortunes, being hopelesse in that paltrie Juncke ever to returne to their Countrey, resolved with themselves either to gaine my shippe or to lose their lives.

And upon mutuall courtesies, with gifts and feastings betweene us, sometimes five and twentie or sixe and twentie of their chiefest came aboard: whereof I would not suffer above sixe to have weapons. There was never the like number of our men aboard their Juncke.

I willed Captaine John Davis in the morning to possesse himselfe of their weapons, and to put the Companie before Mast, and to leave some Guard on their weapons while they searched in the Rice, doubting that by searching and finding that which would dislike them they might suddenly set upon my men and put them to the Sword: as the sequell proved.

Captaine Davis, being beguiled with their humble semblance, would not possesse himselfe of their weapons, though I sent twice of purpose from my shippe to will him to doe it. They passed all the day, my men searching in the Rice and they looking on. At the Sunne-setting, after long search and nothing found, save a little Storax and Benjamin,¹ they, seeing oportunitie, and talking to the rest of their Companie which were in my ship, being ncere to their Juncke, they resolved, at a watch-word betweene them, to set upon us resolutely in both ships. This being concluded they suddenly killed and drave over-boord all my men that were in their ship; and those which were aboard my ship sallied out of my Cabbin, where they were put, with such weapons as they had, finding certaine Targets in my Cabbin, and other things that they

¹ See notes 1 and 2, page 174.

used as weapons. My selfe being aloft on the Decke, knowing what was likely to follow, leapt into the waste, where, with the Boate Swaines, Carpenter, and some few more wee kept them under the halfe-decke.

DAVIS'S
LAST
VOYAGE.

At their first comming forth of the Cabbin, they met Captaine Davis comming out of the Gun-roome, whom they pulled into the Cabbin, and giving him sixe or seven mortall wounds they thrust him out of the Cabbin before them. His wounds were so mortall that he dyed as soone, as he came into the waste. They pressed so fiercely to come to us, as we receiving them on our Pikes, they would gather on our Pikes with their hands to reach us with their Swords. It was neere halfe an houre before we could stone them backe into the Cabbin: In which time we had killed three or foure of their Leaders.

Captaine
John Davis
slaine.

Three or
foure of the
Japonian
Leut^{ants}
killed.

After they were driven into the Cabbin they fought with us at the least foure houres before we could suppress them, often fying the Cabbin, burning the bedding, and much other stuffe that was there. And had we not with two Demy-culverings,¹ from under the halfe decke, beaten downe the bulke head and the pompe of the ship we could not have suppressed them from burning the ship. This Ordnance being charged with Crossebarres, Bullets, and Case-shot, and bent close to the bulke head, so violently marred therewith boords and splinters that it left but one of them standing of two and twentie. Their legs, armes, and bodies were so torne as it was strange to see how the shot had massacred them.

One and
twentie
Japonians
slaine with
demiculver-
ing shot.

In all this conflict they never would desire their lives, though they were hopelesse to escape: such was the desperatenesse of these Japonians. Only one leapt over-board,

¹ Demi-Culverin was the name given to a gun whose length was from 12 to 14 feet, diameter of bore $6\frac{1}{2}$ inches, and weight of shot, 33 lbs. This piece had a point blank range of 160 paces, but would throw a ball to a distance of about 2,000 paces.

which afterward swamme to our ship againe and asked for grace; wee tooke him in, and asked him what was their purpose?

He told us that they meant to take our shippe and to cut all our throates. He would say no more, but desired that he might be cut in pieces.

The next day, to wit, the eight and twentieth of December, we went to a little Iland to the Leeward off us. And when we were about five miles from the Land, the Generall commanded his people to hang this Japonian; but he brake the Rope, and fell into the Sea. I cannot tell whether he swamme to the land or not.

We tooke our course right to the little fore-said Iland, and came there to an Anchor the thirtieth of December. We remained there three dayes to mend our Boat, and to take in wood and water.

In this Iland we found a ship of Patane, out of which we tooke the Captaine, and asked him whether the ships of China were come to Patane, or no? He told us that they were not yet come, but that they would come thither within few dayes. We made the Captaine of that ship to be our Pilot, because he knew very well to what place the Chinish ships would come.

The tenth of January we purposed to stay there, till it pleased God that we should meete the Chinish ships.

The twelfth of Januarie, one of our Mates climbed up to the top of the Mast, and descryed two ships which came toward us: but because of the wind they were forced to goe to the Leeward of the Iland. Assoone as we had sight of them wee weighed Anchor, and made toward them. And we fetched up the greatest of them the twelfth of Januarie in the night. We fought a little with them, and boarded them, and brought them to an Anchor.

The next day, to wit, the thirtieth of Januarie we unladed some of their goods, to wit, raw Silke and other

Silkes. They had fiftie Tunnes of Silver of their Countrey, but we tooke little or none of it, because we had good hope that we should meete with the other Chinish ships. After we had taken some of their Silkes we let them depart the fifteenth of January, and gave them twice as much as wee had taken from them. And casting them off wee tooke our courso backe againe to China Bata; but we could not fetch it up, because we had contrarie wind; so that we were forced to put Lee-ward unto two small Ilands, which they of Java call Pulo Sumatra, where we came to an Anchor the two and twentieth of Januarie.

They re-
turne from
the Ilo
Bintam.

Two small
Ilands
called Pulo
Sumatra.

The foure and twentieth day, as we rode at Anchor, there arose a great storme of wind, with which our Cable brake, so that we were forced to put into the neerest Creeke.

The second of February, five Holland ships met with us sayling homeward, which put into the same Roade where wee were. Captain Warwicke was Generall of these ships. Hee sent to our Generall to dine with him. Our Generall went to him. He told us that our English Merchants in Bantam were in great perill, and that still they looked for nothing else then that the King of Java would assault them, because we had taken the China ship, whereby the King of Bantam had lost his custome. Wherefore Captaine Warwicke requested our Generall that hee would cease to goe any further, and would sayle home unto England with him.

February.

Our Generall answered, That hee had not as yet made his Voyage, and that therefore hee would not returne, untill it should please God to send him somewhat to make up the Game. The Hollanders perceiving that they could not persuade our General to give over his purpose, departed from us the third of Februarie.

February
the third.

Our Generall considering, that if he should proceed on his Voyage, it would be very dangerous for the English Merchants which were resident in those parts, and seeing that hee had but two Anchors and two Cables to helpe himselve

DAVIS'S
LAST
VOYAGE.

withall, thought good to repaire his ships, and to returne home with that poor Voyage that he had made.

They re-
turne home.

When our ships were readie, and that we had taken in wood and water, wee hoysed up our sayles the fift of February to returne for England.

April 7,
1606.

The seventh of Aprill we had sight of the Cape of Bona Esperanza, after wee had passed a great storme.

Sancta
Helena.

The seventeenth of Aprill we came to the Ile of Sancta Helena, where we watered, and found refreshment, as Wine and Goates, which we our selves killed.

In the said Iland are many wilde Swine and Goates. There are also great store of Partridges, Turkie Cockes and Ginnie Hennos. This Iland is not inhabited.¹ Wee departed from thence the third of May.

May.

The fourteenth we passed under the Equinoctiall Line.

They
arrived in
Milford
Haven in
Wales.

The seven and twentieth of June, we arrived in Milford Haven in Wales.

They came
to Ports-
mouth.

The ninth of July we came to an Anchor in Portsmouth Roade, where all our Companie were dismissed. And heere wee ended our Voyage, having beene out upon the same full nineteene moneths, in the yeare 1606.

¹ The island of St. Helena was first discovered by the Portuguese in the year 1502. It was subsequently taken possession of by the Dutch, who, however, abandoned it for the Cape of Good Hope in 1651. It was then occupied by the English East India Company, whose ships invariably called there, for water and fresh provisions, on their voyages to India.

Mr. John Daves his observations Voyaging from
Acheane to Tecoe and Priaman.¹

IF you were at Acheane and would saile for Priaman,² which is a Town upon ye west Sid of Sumatra, and hath in Latitude no degres fifty minutes South and Longitude from ye Cape of Good Hope seventy seven degrees fourty minutes East, ye veryation foure degrees forty minutes from North to West, ye surest way is this.—To ye Eastward of Priaman, there are Ilands in ye South Latitude of one degre and thirty minutes which are called ye Ilands of Nimcam; your course is to goe with these Ilands and come not betwene ye maine, but keepe ye Sea, till you see those Ilands: keepe in one degree twenty minutes of South latitude, and you shall shurly fall with ye north end of ye Biggest. Now this great Iland being ye biggest of ye two, is twenty leagues long very neere, and there are many little Ilands neere it, and when you are with this Iland goo up by it, for its ye bolder of the two, but have your lead going now and then to prevent danger, yet I have found ye least to bee ten fathoms watt'r: when you are shutt within these Ilands your course is East and by North eighteen leagues, but sayle not by Night, but hull reather,³ and saile by day. Now although Priaman and this Island doe lie East and by North, and West and by South, yet your best way is to direct your course East North East, and North East and by East a long; and then you shall see three hummocks on ye

¹ These observations are extracted from the Sloane MS., 3668, fol. 157.

² Priaman is in lat. 0° 40' S., and 100° 15' East longitude.

³ See note 1, page 28.

maine before you can see ye low land, and then having sight of them you may goe in till you see ye low land of ye maine: but looke well about you, for when these hilles come to ye North East from you, there is shold watt'r and bankes of stone, but you may borrow of them with your lead in Seven fathoms, then are you Six leagues from ye Port of Priaman, and your course East South East, or South East and by East with your lead going now and then, for ye knowing of ye Road of Priaman; when you have ye hilles North and west from you, you shall see many Ilands to ye Southward; by ye furst will show white, and none of the rest, soe y't ye Ilands lieth West South West from ye Road three leagues, and ye land in ye Country about Priaman is high and like a saddle in ye midst, this high land bareth from ye Road North East and by East. I set it downe with this notice because there are fore Ilands before ye Road with in which you ride, and may mistrust to goe with in these Ilands when you come from ye West North West, because they will not be open, but show like a pare of breeches till you have brought them East North East from you, then will they beginne to open, for there is good Going in betweene them, leaving two on ye one side and two on ye other, but come not nere y't little uttermost Isle by ye maine for there is all flat ground, but keepe in nine or eight fathoms, till you come with ye other three Ilands that lie in a row, and under y't Island is ye Road, wherefore be bold of itt in five or six fathomes, because its but narrow between that Isle and ye River running from ye Towne, to witt, much upon ye breadth of ye Theames att Blackwall. Upon this Island under which you ride is a well made artifistially by those y't have used to watt'r there; it is a good Road when you are in, but more¹ your Ship sure; ye people here are covetous and still begging for on thing or other, yett they used us very well, and

¹ Moor.

brought us henes and such victualles as ye place afforded. Here is good trade from Java with Junkes, for their Pepper they bring them Salt, which is very scant upon this sid of ye Iland, and about Septemb. and Octob. there cometh every yeare a Guserat with Cotton cloth to serve this sid of the Iland, and ladeth away pepper and carieth away some Gould, for Gould is more plenty there then Silver, as wee might planly see by ye Cuntry peple, for they are very desirus of Rials¹ of $\frac{\infty}{\infty}$; here is some Benjamin to be had and very good Storax, with other Commodities.

Tecou is seven leagues from this Roade but is should watt'r and ill for Shippes, because they must ride fare of, but Prowes and such small Vesseles as ye Countrey peple use are fittest, and will bring all their Comodities unto you into Priaman road, after they know a ship to bee there ten leagues.

To ye Northward of Priaman there are now Ilands three or foure leagues of, but to ye Southward ye coast is full of Ilands along till you com in two degrees and halfe of latitude, ye cost lieth from Priaman to tow degrees twenty minuts of Latitude South, your course is South when you sett saile from Priaman you may goe with in these Ilands by ye Road, because by ye South Island Lieth a shoald close by ye aforesaid, your depth is five or six fathomes in going downe to ye Southward keepe ye maine still and goe not with out among those Ilands, for its ill ground and shoalds, but saile not by Night till you come into ye latitude of two degrees thirtie minutes, for as you passe by ye high land y't is distant from ye Road of Priaman thirteene leagues its very dangerous keepe your selfe in twenty or thirty fathoms watt'r of ye maine, and looke well about you when this high land cometh toward ye East, betwen y't gut of high land as you passe like

¹ A *Real* was a silver Spanish coin, whose value was the eighth part of a dollar.

Dartmouth is ye Towne Custodia, I have had by going neere those Ilands here about thirteen leagues from ye aforesaid road, but foure fathoms watt'r and have seene ye stones under ye Ship and have gone but little in again toward ye maine, and have had sixtene fathoms and twenty fathoms watt'r: wherefore there is no feare by ye maine land keeping your lead going, then being cleare of those Ilands your course is South and by East by ye maine, till you come to tow degrees thirty minutes, and then ye land lieth to three degrees tenne minutes South East, and then South East and by South to foure degrees, and soe to five degrees no minutes by ye same course.

If you are bound for ye Port of Priaman and coming from ye Southward, you shall see many small Islands, butt by my advice come nott between non of them for there is many breakers, till you shall come up w'th an Island att first will shew itt selfe Like a boate wind Saile, and as you neer itt you will find y't itt is onely one or two Trees y't is higher y'n all ye rest on ye Island, w'ch Island Leaving on ye Starboord Side as allsoe all ye rest to ye Southward by itt, soe you shall have another small Island showing like a Moores Turbath as they doe ware on their heades, soe as neer as may bee or as occation will give Leave keep ye middle between ye 2 Islands soe leaving ye last mentioned on ye Larboord Side, w'ch Island ye Country people call pulla Gowsan, there lyeth breakers neer both ye Islands, butt there is roome enough, for they ly neer 4 Leagues asund'r: and being in ye midd way between them you shall find noe ground in 45 fū' of Line, y'n if cleer whea'r you shall see ye 4 Islands y't makes ye Road of Priam, bearing N. b. E. to N. N. E. from you, and ye 2 great hills will bee y'n N. E. b. N. from you, soe stearing partly with ye middlemost two Islands till you bee some 3 or 4 Myles w'th in ye Island pulla Gowsan, y'n you shall find 38 fath. watt'r w'th a fine pepperish Sand, soe y't if itt should

happen to bee night time there is noe feare in finding a way good method of Sounding of 36, 34, 32, 30, and see to 15 fath', y'n will you bee about a myle and $\frac{1}{2}$ from ye Road, and for ye knowing ye road your best way is to goe throw between the 2 middle Islands and keeping an Equall distance between y'm you shall find noe less watt'r y'n 6 and $5\frac{1}{2}$ ffathom till you bee through, y'n keep cloase to ye Island on your Larboord Side, and you may Anchor in 4 ffa', which is ye most you will find between ye Island and ye Shoald from ye Maine, being nott much broad'r y'n ye River of Theames att Blackwall, you must bring ye Island to beare W. S. W. $\frac{1}{2}$ W. or els if you bee more Southerly or more Northerly you will find all Currell bankes w'ch will bee seen att low watt'r, bee suro to moore w'th ye best Anchor and Cable toward the Island and ye other to ye Shoald. The high land showing Like ye Seate of a Saddle will beare N. E. $\frac{1}{2}$ E. This Road of Priaman I find by very good obs'n to bee Situated in Latt'd' S. $0^{\circ} 35'$

THE
WORLDES HYDROGRAPHI-
CAL DISCRIPTION.

Wherein is proved not onely by Aucthoritie of Writers,
but also by late experience of Travellers and Reasons
of Substantiall Probabilitie, that the Worlde in all
his Zones, Clymats, and places, is habitable
and inhabited, and the Seas likewise
universally navigable without any
naturall anoyance to hinder
the same,

Whereby appeares that from England there is a short and
speedie passage into the South Seas, to China,
Molucca, Philippina, and India, by Northerly
Navigation.

To the Renowne, Honour, and Benifit of Her Majesties State and
Communalty.

Published by
J. DAVIS OF SANDRUDG BY DARTMOUTH,
In the Countie of Devon, Gentleman.

ANNO 1595, MAY 27.

Imprinted at London
By THOMAS DAWSON,
Dwelling at the Three Cranes in the Vinetree, and are there to be sold.

1595.

TO THE
RIGHT HONORABLE
LORDES OF HER MAJESTIES MOST HONORABLE
PRIVIE COUNSAYLE.

My most honorable good Lords, for as much as it hath pleased God, not only to bestow upon your Lordships the excellent gifts of natures benefite, but hath also beautified the same with such speciall ornamentes of perfection: As that thereby the mindes and attentive industrie of all, have no small regard unto your honorable proceedings. And so much the rather, because to the great content of all her majesties most loving subjectes, it hath pleased her highnes in her stately regard of government, to make choise of your honours as speciall members in the regall disposition of the mightinesse of her imperiall command: Emboldeneth me among the rest to humble my selfe at your honorable feete, in presenting unto the favour of your excellent judgments this short treatise of the Worldes Hydrographicall bands. And knowing that not onely your renowned places, but also the singularitie of your education, by the prudent care of your noble progeniters, hath and still doth induce and drawe you to favour and imbrace whatsoever beareth but a seeming of the commonweales good: Much more then that which in substantiall truth shal be most beneficiall to the same. I am therefore the more encouraged not to slacke this my enterprise, because that through your honorable assistance, when in the ballance of your wisdomes this discovery shall have indifferent consideration, I knowe it will be ordered by you to bee a matter of no small moment to the good of our countrie. For thereby wee shall not onely have a copious and rich vent for al our naturall and artificiall comodities of England, in short time by safe passage, and without offence of any, but also shall by the first employment retourne into our countrey by spedie passage, all

Indian commodities in the ripenes of their perfection, whereby her Majesties dominions should bee the store-house of Europe, the nurse of the world, and the glory of nations, in yielding all forrayne naturall benefites by an easie rate: In communicating unto all whatsoever God hath unto any one assigned: And by the increase of all nations through the mightinesse of trade. Then should the merchant, tradesman, and poore artificer, have imployment equall to their power and expedition, whereby what notable benefites would growe to her Majestie, the state, and comunaltie, I refer to your perfect judgements. And for that I am desirous to avoyde the contradiction of vulgar conceits, I have thought it my best course, before I make profe of the certaintie of this discoverie, to lay downe whatsoever may against the same be objected, and in the overthrowe of those conceipted hinderances the safenes of the passage¹ shall most manifestly appeare, which when your wisdomes, shall with your patience peruse, I doe in no sort distrust your favorable acceptance and honorable assistance of the same.

And although for divers considerations I doe not in this treatis discover my ful knowledge for the place and altitude of this passage, yet whensoever it shall so please your honours to command, I will in few wordes make the full certainty thereof knowne unto your honours, being alwaies redie with my person and poore habilitie to prosecute this action as your honours shall direct, beseeching God so to support you with all happines of this life, favour of her Majestie, love of her highnes subjectes, and increase of honour as may be to your best content.

I most humbly take my leave from Sandrudg by Dartmouth,

this 27 of May, 1595.

Your Honors in all dutifull service to
command, I. D.

¹ The North-west passage is here alluded to.

THE
WORLDS HYDROGRAPHICALL OBJECTIONS
AGAINST
AL NORTHERLY DISCOVERIES.

ALL impediments in nature and circumstances of former practises duly considered. The Northerly passage to China seeme very improbable. For first it is a matter very doubtfull whether there bee any such passage or no, sith it hath bene so often attempted and never performed, as by historical relation appeareth, whereby wee may fully persuade our selves that America and Asia, or some other continent are so conjoynd together as that it is impossible for any such passage to be, the certaintie whereof is substantially proved unto us by the experience of Sebastian Gabota,¹ an expert Pylot, and a man reported of especiall judgement, who being that wayes imployed returned without successe. Jasper Corterialis,² a man of no meane practise, did likewise put the same in execution, with divers others, all which in the best parte have concluded ignorance. If not a full consent of such matter. And therefore sith practise hath reproved the same, there is no reason why men

¹ Sebastian Cabot.

² João Vaz Costa Cortereal, of the household of the Portuguese Infante Dom Fernando, explored the northern sea in 1464 by order of King Affonso V, and discovered the *Terra de Bacalhãos*, or land of cod-fish, afterwards called Newfoundland. His son, Gaspar Cortereal, undertook a second northern voyage in 1500. Sailing from the Azores, he discovered land, which he called "*Terra Verde*", in 60° N. This was probably Labrador. In 1501 he again sailed, and never returned. His brother Michael went in search of him in 1502, but he also was lost.

should dote upon so great an incertayntie, but if a passage may bee proved and that the continentes are disjoyned whereof there is small hope, yet the impedimentes of the clymate (wherein the same is supposed to lie) are such, and so offensive as that all hope is thereby likewise utterly secluded, for with the frozen zone no reasonable creature will deny, but that the extremitie of colde is of such forceable action (being the list in the fulness of his owne nature without mitigation) as that it is impossible for any mortall creature to indure the same, by the vertue of whose working power those Northerly Seas are wholly congealed, making but one mas or continen^t of yse, which is the more credible, because the ordenary experience of our fishermen geveth us sufficient notice thereof, by reason of the great quantitie of yse which they find to be brought upon the coast of newfound land from those Northerne regions. By the aboundance whereof they are so noysomly pestred, as that in many weekes they have not beene able to recover the shore, yea and many times recover it not untill the season of fishing bee over passed. This then being so in the Septentrionall latitude of 46, 47, and 48 degrees, which by natures benefit are latitudes of better temperature than ours of England, what hope should there remayne for a navel^l passing to be by the norwest, in the altitude of 60, 70, or 80 degrees, as it may bee more Northerly, when in these temperate partes of the world the shod¹ of that frozen sea breadeth such noysome pester, as the pore fishermen doo continually sustain. And therefore it seemeth to be more then ignorance that men should attempt Navigation in desperate clymates and through seas congealed that never dissolve, where the stiffnes of the colde maketh the ayre palpably grosse without certainty that the landes are disjoyned.

¹ The clinging of the ice, the annoyance caused by it. An anchor is said to be *shod* when sand and clay adhere to it.

All which impediments if they were not, yet in that part of the world Navigation cannot be performed as ordenarily it is used, for no ordenario sea chart can describe those regions either in the partes Geographically or Hydrographically, where the Meridians doe so speedily gather themselves together, the parallels beeing a very small proportion to a great circle, where quick and uncertayne variation of the Compass may greatly hinder or utterly overthrow the attempt. So that for lack of Curious lyned globes to the right use of Navigation; with many other instruments either unknowne or out of use, and yet of necessity for that voyage, it should with great difficultie be attained.

All which the premises considered I refer the conclusion of these objections and certainty of this passage to the generall opinion of my loving countrymen, whose dangerous attempts in those desperato uncertainties I wish to be altered, and better employed in matters of great probability.

To prove a passage by the Norwest, without any land impediments to hinder the same, by auctoritie of writers, and experience of travellers, contrary to the former objections.

Homer an ancient writer affirmeth that the world being devided into Asia, Africa, and Europe is an Island,¹ which is likewise so reported by Strabo² in his first book of Cosmographic, Pomponius Mela³ in his third booke, Hig-

¹ This affirmation of Homer is quoted by Strabo (lib. 1, cap. i, sec. 3).

² "Perception and experience alike inform us that the earth we inhabit is an island: since, wherever men have approached the termination of the land, the sea, which we designate ocean, has been met with."—Strabo (Bohn trans., i, p. 7).

³ Pomponius Mela, the geographer, flourished about 45 A.D. The best editions of his work, called *De Situ Orbis*, date from the last century; but it was well known in the days of Elizabeth.

nius,¹ Solinus,² with others. Whereby it is manifest that America was then undiscovered and to them unknowne, otherwise they would have made relation of it as of the rest. Noither could they in reason have reported Asia, Africa, and Europa to bee an Iland unles they had knowne the same to be conjoynd and in all his partes to be invironed with the seas. And further, America beeing very neere of equall quantitie with all the rest, could not be reported as a parte either of Africa, Asia, or Europa, in the ordenario lymites of discretion. And therefore of necessitie it must be concluded that Asia, Africa, and Europa, the first reveiled world being knowne to bee an Iland, America must likewise be in the same nature because in no parte it conjoyneth with the first.

By experience of Travellers to prove this passage.

And that wee neede not to range after forrayne and ancient authorities, whereat curious wittes may take many exceptions, let us consider the late discoveryes performed, within the space of two ages not yet passed, whereby it shall so manifestly appeare that Asia, Africa, and Europa are knit together, making one continent, and are wholly invironed with the seas, as that no reasonable creature shall have occasion thereof to doubt. And first beginning at the north of Europe from the north cape in 71 degrees, whereby our merchantes passe in their trade to S. Nicholas³ in Rouscia descending towards the South, the Navigation is without impediment to the Cape of Bona Esperanca, ordenarilie traded and daily practised.

¹ C. Julius Hyginus, an obscure Latin grammarian and commentator.

² C. Julius Solinus, a grammarian at the end of the first century, who wrote a book called *Polyhistor*: a collection of geographical notes. He has been called Pliny's Ape.

³ The town of St. Nicholas, situated on the eastern shore of the White Sea.

And therefore not to be gaynesayed: which two capse are distant more then 2,000 leagues by the neerest tract, in all which distaunces America is not founde to bee any thing neere the coastes either of Europe or Afric, for from England the chefest of the partes of Europa to Newfoundland being parte of America it is 600 leagues, the neerest distance that any part thereof beareth unto Europa. And from Cape Verde in Gynny,¹ being parte of Africa, unto Cape Saint Augustine in Brasill beeing parte of America, it wanteth but little of 500 leagues, the neerest distance betweene Africa and America. Likowise from the sayd North Cape to Nova Zemla by the course of East and West neerest, there is passable sayling, and the North partes of Tartaria are well knowne to be banded with the Scithian Seas to the promontary Tabin,² so that truely it is apparant that America is farre remooved, and by a great sea divided from any parte of Africa or Europa.

And for the Southerne partes of the first reveiled world, it is most manifest that from the Cape of Bona Esperanca towards the east, the costes of Sofallà, Mosombique Melinde, Arabia, and Persia, whose gulfes lye open to the mayne occian :

And all the coastes of East India to the Capes of Callacut and Malacca, are banded with a mightie sea upon the South, whose lymmates are yet undiscovered.

And from the cape of Malacca towards the North so high as the Ile of Japan, and from thence the cost of China being part of Asia, continueth still North to the promontary Tabin, where the Scithian Sea and this Indian Sea have recourse togeather, no part of America being nere the same by many 100 leages to hinder this passage.

For from the Callafornia being parte of America, to the yles of Philippina bordering upon the coastes of China being parte of Asia, is 2,100 leagues, and therefore America

¹ Guinea.

² Now called Cape Chelyuskin.

is farther separated from Asia, then from any the sea coastes either of Europe or Africa. Wherby it is most manifest that Asia, Africa, and Europa are conjoynd in an Iland. And therefore of necessity followeth that America is contained under one or many ylands, for from the septentrionall lat. of 75 deg. unto the straights of Magilan, it is knowne to be navigable and hath our west occian to lymet the borders thereof, and through the straightes of Magillane no man doubteth but there is Navigable passage, from which straightes, upon all the Western borders of America, the costs of Chili, Chuli, Rocha,¹ Baldivia,² Peru to the ystmos of Dariena, and so the whole West shores of Nova Hispania³ are banded out by a long and mightie sea, not having any shore neere unto it by one thousand leagues towards the West, howe then may it be possible that Asia and America should make one continent?

To prove the premisses by the attemptes of our owne Countrey-men, besides others.

But least it should be objected that the premises are conceites, the acting aucthors not nominated, I will use some boldnes to recyte our owne countrey-men by whose paynefull travells these truthes are made manifest unto us. Hoping and intretting that it may not bee offensive, though in this sorte I make relation of their actions.

And firste to begin with the North partes of Europe, it is not unknowne to all our countrymen, that from the famous citie of London, Syr Hugo Willobie,⁴ knight, gave the first attempt for the North estren discoveries, which were afterward most notably accomplished by master Borrowes,⁵ a Pylot of excellent judgements, and fortunate in his actions, so farre as Golgova Vaygats and Nova Zemla, with trade thereby pro-

¹ Mocha. An island on the coast of Chile.

² A sea-port in the south of Chile.

³ Sir Hugh Willoughby.

⁴ Mexico.

⁵ Stephen Borrough.

cured to S. Nicholas in Rouscia. Then succeeded master Ginkinson,¹ who by his land travell discovered the Scithian sea to lymit the North coastes of Tartaria so farre as the river Ob. So that by our countrymen the North partes of Europe are at full made knowne unto us: and proved to joyne with no other continent to hinder this passage. The common and ordenary trade of the Spanyard and Portingall, from Ilysborne to the coasts of Guyny, Byunny, Mina, Angola, Manicongo, and the cost of Ethiopia, to the cape of Bona Esperanca, and all the cost of Est India and Iles of Molucca, (by which wonderfull and copious trade, they are so mightily enriched, as that now they challeng a monarchy unto themselves upon the whole face of the earth), that their trade I say prooveth that America is farre seperated from any parte of Africa or the South of Asia.

And the same Spaniard trading in the Citye of Canton within the kingdome of China, having layd his storehouse of abundance in Manellia,² a citye by him erected in Luzon, one of the Iles of Philippa, bordring upon the cost of China, doth by his common and ordenarie passages to Japan and other the borders of the coast, knowe that the Est continent of Asia lieth due North and South, so high as the promontory Tabin,³ where the Scithian sea and his maine occian of China are conjoynd. But with what care they labour to conceale that inatter of Hydrographie for the better preservation of their fortunate estate, I refer to the excellent judgement of statesmen that painefully labour in the glorious administration of a well governed Common weale, so that by them Africa and Asia are proved in no parte to joyne with America, thereby to hinder this passage.

¹ Anthony Jenkinson.

² Manilla.

³ The name given by Pliny, who says, "*Iterum deinde Scythæ. Iterumque deserta cum belluis, usque ad jugum incubans mari, quod vocant TABIN*".—C. Plinii, *Nat. Hist.*, lib. vi.

By late experience to prove that America is an Iland, and may be sayled round about contrary to the former objection.

Asia, Africa, and Europa being proved to be conjoined and an Iland, it now resteth to bee knowne by what authoritie America is proved to be likewise an Iland, so that thereby all land impedimentes are removed, which might brede the dread or uncertaynty of this passage. The first Englishman that gave any attempt upon the coastes of West India, being parte of America, was syr John Hawkins, knight: who there and in that attempt, as in many others sithins, did and hath proved himselfe to be a man of excellent capacity, great government, and perfect resolution. For before he attempted the same it was a matter doubtfull, and reported the extremest lymit of danger to sayle upon those coastes. So that it was generally in dread among us, such is the slownes of our nation, for the most part of us rather joy at home like Epicures, to sit and carpe at other mens hassardes, our selves not daring to give any attempt. (I meane such as are at leisure to seeke the good of their countrie, not being any wayes imployed as paynefull members of a common weale,) then either to further or give due commendations to the deservers howe then may Syr John Hawkins bee esteemed, who, being a man of good account in his Country, of wealth and great imployment, did notwithstanding for the good of his Countrey, to procure trade, give that notable and resolute attempt. Whose steps many hundreds following sithins have made themselves men of good esteeme, and fit for the service of her sacrid majestie.

And by that his attempt of America (wherof West India is a parte) is well proved to be many hundred leagues distant from any part of Afric or Europe.

Then succeeded Syr Francis Drake in his famous and

ever renowned voyage about the world, who departing from Plimouth, directed his course for the straightes of Magillane, which place was also reported to be most dangerous, by reason of the continuall, violent, and unresistable current that was reported to have continuall passage into the straightes, so that once entring therein there was no more hope remayning of returne, besides the perill of shelves, straightness of the passage, and uncertayne wyndinges of the same, all which bread dread in the highest degree, the distance and dangers considered. So that before his revealing of the same the matter was in question, whether there were such a passage or no, or whether Magillane did passe the same, if there was such a man so named; but Syr Frauncis Drake, considering the great benefit that might arise by his voyage through that passage, and the notable discoveries that might be thereby performed, regarded not these dastardly affections of the idle multitude, but considering with judgement that in nature there cold be no such perpetuities of violence where the occian is in no sorte straighted, proceeded with discreet provision, and so departing from England arrived unto the same, and with good successe (through Gods most favorable mercy passed through), wherein his resolution hath deserved everlasting commendations. For the place in viewe is dangerous and verye displeasing, and in the execution to passe Nothing may seeme more doubtful, for fourteen leagues west within the cape of Saint Maria¹ lyeth the first straight, where it floweth and ebbeth with violent swiftnes, the straight not half a mile broad, the first fall into which straight is verye dangerous and doubtfull.

This straight lasteth in his narrownes three leages, then falling into another sea eight leages broad, and eight leages through there lyeth the second straight, due west South-

¹ Cape Virgins, sometimes called by the old navigators Cabo de la Virgen Sta. Maria. See also note 1, p. 109.

West from the firste, which course, being unknowne, it is no small perill in finding this second straightes, and that agayne is not a myle broad, and continueth the bredth, three or four leages South west, with violent swiftnes of flowing and reflowing, and there agayne he falleth into another Sea, through which, due South south-west, lyeth the Cape Froward and his straight (so rightly named in the true nature of his perversenes, for be the wind never so favorable at that cape it will be directly agaynst you, with violent and daungerous flaughes), where there are three places probable to continue the passage.

But the true straight lyeth from this capo West Nor West, where the land is very high, all covered with snowe, and full of dangerous counter-windes, that beate with violence from those huge mountaines, from which cape the straight is never broder then two leages, and in many places not halfe a mile without hope of anchorage, the channell beeing shore deepe more then two hundreth fadomes, and so continueth to the South Sea forty leages, only to bee releved in little dangerous coves, with many turnings and chang of courses: how perilous then was this passage to Syr Frauncis Drake, to whom at that time no parte thereof was knowne. And being without reliefe of anchorage, was inforced to follow his course in the hell darke nights, and in all the fury of tempestious stormes. I am the bolder to make this particular relation in the praise of his perfect constancy and magnanemitye of spirite, because I have thrised passed the same straightes, and have felt the most bitter and mercyles fury thereof. But now knowing the place as I doe (for I have described every creke therein),¹ I know it to be a voiage of as great certaynty, pleasure, and ease as any whatsoever that beareth

¹ It is greatly to be regretted that this description of the Strait of Magellan by John Davis is not to be found. John Jane alludes to it in his *History of the Voyage*, at p. 117.

but $\frac{1}{4}$ the distaunce from England that these straighes doo. And this straight is founde to 1,200 leages from any parto of Africa, so that truely it is manifest that these two landes are by no small distance seperated.

And after that Syr Frauncis was entred into the South Seas he coasted all the Westerne shores of America untill he came into the Septentrionall latitude of forty-eight degrees being on the backe syde of Newfound land. And from thence shaping his course towardes Asia found by his travells that the Ills of Molucca are distant from America more then two hundreth leages, howe then can Asia and Africa be conjoynd and make one continent to hinder the passage, the men yet living that can reprove the same, but this conceipt is the bastard of ignorance borne through the fornication of the malitious multitude that onely desire to hinder when themselves can doe no good.

Now their onely resteth the North parts of America, upon which coast myselfe have had most experience of any in our age: for thrise I was that waye imployed for the discovery of this notable passage, by the honourable care and some charge of Syr Francis Walsingham, knight, principall secretary to her Majestic, with whom divers noble men and worshipfull marchants of London joyned in purse and willingnesse for the furtherance of that attempt, but when his honour dyed the voyage was friendlesse, and mens mindes alienated from adventuring therein.

In my first voyage not experienced of the nature of those climates, and having no direction either by Chart, Globe, or other certaine relation in what altitudo that passage was to be searched, I shaped a Northerly course, and so sought the same toward the South, and in that my Northerly course I fell upon the shore which in ancient time was called Groenland, five hundred leagues distant from the Durseys,¹ West-north west Northerly, the land being very high and full of

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¹ See note 3, p. 33.

mightie mountaines all covered with snowe, no viewe of wood, grasse, or earth to be seene, and the shore two leagues off into the sea so full of yce as that no shipping could by any meanes come neere the same. The lothsome view of the shore, and irksome noyse of the yce was such, that it bred strange conceites among us, so that we supposed the place to be wast and voyd of any sensible or vegitable creatures, whereupon I called the same Desolation : so coasting this shore towards the South in the latitude of sixtie degrees, I found it to trend towards the West, I still followed the leading therof in the same height, and after fifty or sixtie leagues it fayled and lay directly North, which I still followed, and in thirtie leagues sayling upon the West side of this coast, by me named Desolation, we were past al the yce and found many greene and pleasant Isles bordering upon the shore, but the mountaines of the maine were still covered with great quantities of snow. I brought my ship among those Isles, and there mored to refresh ourselves in our weary travell, in the latitude of sixtie foure degrees or there about. The people of the countrey having espyed our shippes came downe unto us in their Canoas, and holding up their right hand to the Sunne and crying *Yliaout*,¹ would strike their breasts : we doing the like the people came aboard our shippes, men of good stature, unbearded, small eyed and of tractable conditions, by whome as signes would permit, we understood that towards the North and West there was a great sea, and using the people with kindenes in giving them nayles and knives which of all things they most desired, we departed, and finding the sea free from yce, supposing our selves to be past al daunger, we shaped our course Westnorthwest, thinking thereby to passe for China, but in the latitude of sixtie sixe degrees wee fell with another shore, and there found another passage of twenty leagues broad directly West

¹ See p. 21.

into the same,¹ which we supposed to be our hoped straight, we entered into the same thirtie or fortie leagues, finding it neither to wyden nor straighten; then considering that the yeere was spent (for this was in the fine of August) not knowing the length of the straight and dangers thereof, we tooke it our best course to returne with notice of our good successe for this small time of search.

And so returning in a sharpe fret of Westerley windes, the 29 of September, we arrived at Dartmouth. And acquainting master Secretary with the rest of the honourable and worshipfull adventurers of all our proceedings, I was appointed againe the seconde yere to search the bottome of this straight, because by all likelihood it was the place and passage by us laboured for.

In this second attempt the marchants of Exeter and other places of the West became adventurers in the action, so that being sufficiently furnished for sixe moneths, and having direction to search these straights untill we found the same to fall into another sea upon the West side of this part of America, we should againe returne: for then it was not to be doubted but shipping with trade might safely be conveyed to China and the parts of Asia. We departed from Dartmouth, and arriving unto the South part of the coast of Desolation, coasted the same upon his West shore to the latitude of sixetie .sixe degrees, and there anchored among the Isles bordering upon the same, where we refreshed our selves; the people of this place came likewise unto us, by whom I understood through their signes that towards the North the sea was large.

At this place the chiefe ship whereupon I trusted, called the *Mermaid of Dartmouth*, found many occasions of discontentment, and being unwilling to proceed, shee there forsook me. Then considering how I had given my faith and most constant promise to my worshipfull good friend master Wil-

¹ Cumberland Gulf.

liam Sanderson, who of all men was the greatest adventurer in that action, and tooke such care for the performance thereof, that he hath to my knowledge at one time disbursed as much money as any five others whatsoever out of his owne purse, when some of the companie have been slacke in giving in their adventure: And also knowing that I should loose the favor of M. Secretary Walsingham if I should shrink from his direction: in one small barke of 30 Tunnes whereof M. Sanderson was owner, alone without farther comfort or company I proceeded on my voyage, and arriving at these straights followed the same 80 leagues untill I came among many Islands, where the water did ebbe and flowe sixe fadome up right,¹ and where there had bene great trade of people to make traine.² But by such things as there we found wee knew that they were not Ohristians of Europe that had used that trade: in fine, by searching with our boat we found small hope to passe any farther that way, and therefore retourning agayne recovered the sea and coasted the shore towards the South, and in so doing (for it was too late to search towards the North) we found another great inlet neere 40 leagues broad, where the water entered in with violent swiftnesse, this we also thought might be a passage: for no doubt the North partes of America are all Islands by ought that I could perceive therein: but because I was alone in a small barke of thirtie tunnes, and the yeere spent, I entred not into the same, for it was now the seventh of September, but coasting the shore towards the South wee saw an incredible number of birds: having divers fishermen aboard our barke they all concluded that there was a great skull of fish, we being unprovided of fishing furniture with a long spike nayle made a hooke, and fastening the same to one of our sounding lines, before the bait was changed we tooke more than fortie great Cods, the fish swimming so

North
partes of
America all
Islands.

¹ The rise and fall of the tide is here alluded to.

² Train-oil.

abundantly thicke about our barke as is incredible to bee reported, of which with a small portion of salt that we had, we preserved some thirtie couple, or thereabouts, and so returned for England.

And having reported to M. Secretarie Walsingham the whole successe of this attempt, he commanded me to present unto the most honourable Lord high Treasurour of England some part of that fish: which when his Lordship saw, and heard at large the relation of this second attempt, I received favourable countenance from his honour, advising me to prosecute the action, of which his Lordship conceived a very good opinion.

The next yere, although divers of the adventurers fell from the Action, as all the Westerno marchants, and most of those in London: yet some of the adventurers, both honourable and worshipfull, continued their willing favour and charge, so that by this meanes the next yere two shippes were appointed for the fishing and one pinnesse for the discoverie.

Departing from Dartmouth, through Gods mercifull favour, I arrived at the place of fishing, and there according to my direction, I left the two ships to follow that busines, taking their faithfull promise not to depart untill my returne unto them, which should be in the fine of August, and so in the barke I proceeded for the discoverie: but after my departure in sixteene dayes the two shippes had finished their voyage, and so presently departed for England, without regard of their promise: my selfe not distrusting any such hard measure proceeded for the discoverie, and followed my course in the free and open sea betweene North and Northwest to the latitude of 67 degrees, and thero I might see America West from me, and Desolation East: then when I saw the land of both sides I began to distrust it would proove but a gulfe: notwithstanding, desirous to know the full certainty I pro-

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ceeded, and in 68 degrees the passage enlarged, so that I could not see the Western shore: thus I continued to the latitude of 73 degrees in a great sea, free from yce, coasting the Western shore of Desolation: the people came continually rowing out unto me in their Canoes, twenty, forty, and one hundred at a time, and would give me fishes dryed, Salmon, Salmon peale, Cod, Caplin,¹ Lumpe,² Stonebase,³ and such like, besides divers kinds of birds, as Partridge, Fesant,⁴ Guls, Sea birds and other kindes of flesh.

I still laboured by signes to know from them what they knew of any sea toward the North, they still made signes of a great sea as we understood them, then I departed from that coast thinking to discover the North parts of America.

And after I had sayled towards the West 40 leagues, I fel upon a great bank of yce: the winde being North and blew much, I was constrained to coast the same toward the South, not seeing any shore West from me, neither was there any yce towards the North, but a great sea, free, large, very salt and blew, and of an unsearchable depth. So coasting towards the South I came to the place where I left the ships to fish, but found them not. Then being forsaken and left in this distresse, referring my selfe to the mercifull providence of God, I shaped my course for England, and unhopd for of any, God alone releevng me, I arrived at Dartmouth.

By this last discovery it seemed most manifest that the passage was free and without impediment toward the North: but by reason of the Spanish fleet, and unfortunate time of M. Secretarie's death, the voyage was omitted and never sithins attempted.

The cause why I use this particular relation of all my pro-

¹ Capelin (*Mallotus villosus*).

² Lump fish (*Blenius lumpenus*).

³ The black bass (*Centropistis nigricans*).

⁴ The partridges and pheasants can only have been ptarmigan.

ceedings for this discovery, is to stay this objection,—Why hath not Davis discovered this passage being thrise that wayes imploied?

How far I proceeded and in what forme this discovery lieth, doth appeare upon the Globe which M. Sanderson to his very great charge hath published, for the which he deserveth great favour and commendations.¹ Made by master Emery Mullineux, a man wel qualited, of a good judgment and very experte in many excellent practises in myselfe being the onely meane with master Sanderson to imploy master Mulineux therein, whereby he is now growne to a most exquisite perfection.

Anthony de Mendoza, Viceroy of Mexico, sent certayne of his captaynes by land, and also a navy of ships by sea, to search out the Norwest passage, who affirmed by his letters, dated from Mexico in anno 1541 unto the Emperour, being then in Flaunders, that towards the Norwest hee had founde the Kingdome of Cette, Citta, Alls, Ceuera, seven cities,² and howe beyond the sayd kingdome, farther towards the Norwest, Francisco Vasques of Coronado, having passed great desarts, came to the sea side, where he found certayne shippes which sayled by that sea with merchandize, and had in their banners upon the prows of their shippes certayne fowles made of golde and silver, named Alcatrazzi,³ and that the mariners signified unto him by signes, that they were thirtie dayes comming to the haven, whereby he understoode that those could be of no other country but of Asia, the next knowne continent towards the West. And, farther, the sayd Anthony affirmed that by men wel practised hee understoode that

¹ This globe is now in the Middle Temple library. See an account of it in the Introduction.

² The "seven cities" in the kingdom of Cevola, called by Davis Cevera. The other names—Cette, Citta, Alls—are some mistake. See note on next page.

³ Pelicans.

950 leagues of that country was discovered upon the same Sea.¹ Now if the cost in that distance of leagues should lye

¹ In 1532 Hernan Cortes, the conqueror of Mexico, sent two ships from Acapulco, under the command of Don Diego Hurtado de Mendoza, to make discoveries to the north-west. In the previous year Nuño de Guzman, a man of a brutal and ferocious disposition, had led a land expedition to the north of Mexico, in search of the fabled "seven cities". He founded a town on the Pacific coast in nearly 22° N., which was called Compostella, and the new province received the name of New Galicia. Mendoza never returned; but when Cortes heard that his ships were missing, he sent two more in 1533, under Diego Bezerra de Mendoza and Hernando de Grijalva, with orders to search for the missing ships, and continue the discoveries northwards. Bezerra de Mendoza was murdered by his mutinous crew, and these ruffians appear to have been the discoverers of California. Grijalva returned. Nuño de Guzman had seized the ship in which the mutineers had murdered Bezerra de Mendoza, and refused to restore it to Cortes. The conqueror, therefore, marched from Mexico towards New Galicia in 1536, sending three vessels along the coast to meet him. He embarked at the port of Chametlan, meeting with no opposition from Guzman, and sailed north-west to California. He formed a settlement in the bay of Santa Cruz, inside the gulf. On receiving news of the appointment of Don Antonio de Mendoza as Viceroy of Mexico, Cortes returned, leaving his colony to the care of Francisco de Ulloa, who abandoned it soon afterwards, returning to Acapulco in 1537.

The first act of the new Viceroy was to supersede Guzman, and send Francisco Vasquez de Coronado to New Galicia, with orders to conciliate the natives by just treatment, and to make further discoveries. In obedience to these instructions, several journeys were undertaken. Marcos de Niza, a Franciscan Friar, penetrated along the east coast of the Gulf of California, and got tidings of the "seven cities", the nearest of which was Cevola. In consequence of the reports of Niza, an expedition was sent by sea, to discover Cevola, under Francisco de Ulloa, in 1539. Ulloa completed the discovery of the Gulf of California in that year, and then sailed up the exterior coast. Hakluyt (iii, p. 424) says that he reached the latitude of 30° 30' N. before returning to Acapulco in May 1540.

In 1540 the Viceroy Mendoza ordered Francisco Vasquez de Coronado, the Governor of New Galicia, to march into the country of Cevola to the north, three store-ships following along the coast under Hernando de Alarcon. An account of the voyage of Alarcon was written by himself, and is given in Ramusio and Hakluyt. He returned after sailing up the coast of California, and discovering the large river of Colorado

to the West, it would then adjoyne with the North partes of Asia, and then it would be a far shorter voyage then thirtie dayes sayling; but that it is nothing neere Asia by former authoritie is sufficiently expressed: then if it should lie towards the North it would extend itself almost unto the pole, a voiage over tedious to be perfourmed by land travell.

Therefore of necessity this distance of 950 leagues must lie betweene the North and East, which by Anthony de Espacio, in his late travells upon the North of America, is sufficiently discovered. Then, this being so, the distance is very small betweene the East parte of this discovered Sea and the passage wherein I have so painefully laboured. What doth then hinder us of England, unto whom of all nations this discovery would be most beneficiall, to be incredulous, slow of understanding, and negligent in the highest degree for the search of this passage, which is most apparently proved, and of wonderfull benefit to the universal state of our countrey? Why should we be thus blinded, seeing our enemies to posses the fruites of our blessednes and yet will not perceive the same? But I hope the eternall majestie of God, the sole disposer of all thinges, will also make this to appeare in his good time.

at its head. Meanwhile, Coronado marched northwards and found the "seven cities" to be merely small towns in a country called Cevola. It is Gomara (*Conquista de Mexico*, p. 116) who relates the story, referred to in the text, that Coronado's army came to the sea coast, where they saw vessels that had in their prows figures of birds like pelicans, wrought in gold and silver. These vessels were laden with merchandise, and the Spaniards believed that they came from China. The people in them made signs that from their country they had sailed thirty days. Coronado reached a latitude of 40° N. before returning to Mexico.

Next followed, in 1542, the voyage of Juan Rodriguez Cabrillo, who died before the ships returned, having reached 44° N. along the coast. Antonio de Espejo discovered New Mexico in 1583.

Full accounts of these voyages and expeditions by land are given in Hakluyt, from Ramusio and Gomara.

Cornelius Nepos recyteth that when Quintus Metellus Caesar was pro-consull for the Romanes in Fraunce, the King of Suevia gave him certayne Indians, which, sayling out of India for merchandize, were by tempest driven upon the coastes of Germany, a matter very strango that Indians in the fury of stormes should arrive upon that coast. It resteth now carefully to consider by what winde they were so driven. If they had beene of any parte of Africa, how could they escape the ylls of Cape Verd, or the ylles of Canaria, the coastes of Spayne, Fraunce, Ireland, or England to arrive as they did; but it was never knowne that any the natyves of Afric or Ethiopia have used shippings. Therefore they could not bee of that parte of the worlde, for in that distance sayling they would have been starved if no other shore had given them relefe. And that they were not of America is verye manifest, for upon all the Est parte of that continent, beeing now thereby discovered, it hath not at any time beene perceived that those people were ever accustomed to any order of shipping, which appeareth by the arrival of Colon¹ upon those coastes, for they had his shipping in such wonderfull admiration that they supposed him and his companie to have descended from heaven, so rare and strango a thing was shipping in their eyes. Therefore those Indians could not bee of America, safely to bee driven upon the coastes of Germany, the distance and impedimentes well considered.

Then, comming neither from Afric nor America, they must of necessitie come from Asia, by the Noreast or Nor-west passages.

But it should seme that they came not by the Noreast to double the promontory Tabin, to bee forced through the Scithian Sea, and to have good passage through the narrow straight of Nova Zemla, and never to recover any shore, is a matter of great impossibilitie. Therefore it must needes

¹ Columbus.

be concluded that they came by the North partes of America, through that discovered sea of 950 leages, and that they were of those people which Francisco Vasques of Coronado discovered, all which premises considered there remaineth no more doubting but that the landes are disjoyned, and that there is a Navigable passage by the Norwest, of God for us alone ordained to our infinite happines, and for the ever being glory of her majestie, for then her stately seate of London should be the storhouse of Europe: the nurse of the world: and the renowne of Nations, in yelding all forraine naturall benefites by an easie rate, in short time returned unto us, and in the fulnes of their natural perfection: by natural participation through the world of all naturall and artificiall benefites, for want whereof at this present the most part live distressed: and by the excellent comoditie of her seate, the mightines of her trade, with force of shipping thereby arising, and most abundant accesse and intercourse from all the Kingdomes of the worlde, then should the ydle hand bee scorned, and plenty by industry in all this land should be proclaimed.

And therefore the passage proved and the benefits to all most apparant, let us no longer neglect our happines, but like Christians with willing and voluntary spirits labour without fainting for this so excellent a benefit.

To prove by Experience that the Sea fryseth not.

Having sufficiently proved that there is a passage without land impediments to hinder the same, contrary to the first objection, it nowe resteth that the other supposed impediments bee likewise answered. And firste as touching the frost and fresing of the seas, it is supposed that the frozen zone is not habitable, and seas innavigable by reason of the vehemencie of cold, by the divine creator allotted to that part of the world, and we are drawn into that absurdity of this opinion by a conjectural reason of the sunnes far dis-

tance and long absence under the horizon of the greatest parte of that zone, whereby the working power of colde perfourmeth the fulnesse of his nature, not having any contrary disposition to hinder the same, and when the Sunne by his prosence should comfort that parte of the world, his beames are so far removed from perpendicularitie by reason of his continuall neerenes to the horizon, as that the effectes thereof answer not the violence of the winters cold. And therefore those seas remayne for ever undissolved. Which if it be so, that the nature of cold can congeale the seas, it is very likely that his first working power beginneth upon the upper face of the waters, and so descending worketh his effect, which if it were, howe then commeth it to passe that shippes sayle by the North cape to St. Nicholas, five degrees or more within the frozen zone, and finde the seas free from pester of yse, the farther from the shore the clearer from yse. And myselfe likewise howe coulde I have sayled to the septentrionall latitude of seventie five degrees, being nine degrees within the frozen zone, betweene two lands where the sea was straightened not fortie leages broade in some places, and thereby restrained from the violent motion and set of the maine occian and yet founde the same Navigable and free from yse not onely in the midst of the chanell, but also close aborde the estern shore by me name Desolation, and therefore what neede the repetition of authorities from writers, or wrested philosophical reasons, when playne experience maketh the matter so manifest, and yet I deny not but that I have seene in some part of those seas, two sortes of yse, in very great quantity, as a kind of yse by seamen name ylands of yse,¹ being very high above the water, fortie and fiftie fadomes by estimation and higher, and every of those have beene seven times as much under the water, which I have proved by taking a peece of yse and have put the same in a vessell

¹ Icebergs.

of salt water, and still have found the seventh part thereof to bee above the water, into what forme soever I have reduced the same, and this kind of yse is nothing but snowe which falleth in those great peeces, from the high mountains¹ bordering close upon the shore depe seas. (For all the sea coastes of Desolation are mountains of equall height with the pike of 'Tenerif² with verye great vallics betweene them) which I have scene incrediblo to bee reported, that upon the toppes of some of these ylls of yse, there have beene stones of more then one hundreth tonnes wayght, which in his fall that snowe hath torne from the clyffs, and in falling maketh such an horrible noyse as if there were one hundreth canons shot of at one instant, and this kind of yse is verye white and freshe, and with shore winds is many times beaten far of into the seas, perhaps twentic leagues, and that is the farthest distance that they have ever bin scene from the shore. The other kind is called flake yse, blue, very heard and thinne, not above three fadomes thick at the farthest, and this kinde of yse bordreth close upon the shore. And as the nature of heate with apt vessels devideth the pure spirit from his grosse partes by the coning practise of distillation: so doth the colde in these regions devide and congeale the fresh water from the salt, nere such shores where by the aboundance of freshe rivers the saltnes of the sea is mittigated, and not else where, for all yse in general beeing dissolved is very fresh water, so that by the experience of all that have ever travelled towardses the North it is well knowne that the sea never fryseth, but wee know that the sea dissolveth this yse with great specede, for in twentic foure houres I have seen an ylande of yse turne up and downe, as the common phrase is, because it hath melted so fast under water that the heavier

¹ Glaciers.

² Here Davis is inclined to exaggerate; no hills are known in Greenland over 7000 feet high, whereas the Peak of Teneriffe is 12,370!

parte hath beene upwarde, which hath beene the cause of his so turning, for the heaviest part of all things swimming is by nature downwards, and therefore sith the sea is by his heate of power to dissolve yse, it is greatly against reason that the same should be frozen, so that the congelation of the seas can bee no hindrance to the execution of this passage, contrary to the former objection, by late experience reprooved, yet if experience wanted in ordinary reason men should not suppose nature to bee monstrous, for if all such yse and snowe as congealeth and descendeth in the winter did not by natures benefit dissolve in the sommer, but that the cold were more actual then the heate, that difference of inequalitye bee it never so little would by time bread natures overthrowe, for if the one thousand parte of the yse which in winter is congealed, did the next summer remayne undissolved, that continual difference sithins the worldes creation would not onely have converted all those North Seas into yse, but would also by continuall accessse of snowe have extended himselfe above all the ayers regions, by which reason all such exalations as should be drawn from the earth and seas within the temperate zones and by windes driven into these stiffe regions, that moysture was no more to bee hoped for that by dissolution it should have any returne, so that by time the world should be left waterlesse. And therefore how ridiculous this imagination of the seas frysing is, I refer to the worlds generall opinion.¹

That the ayre in colde regions is tollerable.

And now for a full answer of all objections, if the ayre beo proved tollerable then this most excellent and commodious passage is without al contradiction to be perfourmed. And that the ayre is tollerable as well in the winter as in the Som-

¹ Davis must have seen the pan-cake ice forming on the surface of the sea.

mer is thus proved. The inhabitantes of Muscovia, Lapland Swethland,¹ Norway and Tartaria omit not to travel for their commodity: in the deepest of winter, passing by sleades over the yse and congealed snowe being made very slipperie and compact like yse by reason of much wearing and trading, having the use of a kind of stag, by them called Reen,² to drawe those their sleades.

Groynland (by me lately named Desolation) is likewise inhabited by a people of good stature and tractable conditions; it also mayntayneth divers kinde of foules and beastes which I have their seene, but know not their names, and these must travell for their food in winter, and therefore the ayre is not intollerable in the extremest nature of coldnes: and for the quality thereof in Sommer, by my owne experience I knowe that upon the shore it is as hot there as it is at the ylls of cape de Verde, in which place there is such abundance of moskeetes (a kind of gnat that is in India very offensive and in great quantitie), as that we were stung with them like lepers, not beeing able to have quiet, being upon the shore.

And under the clyfe, in the pooles unto which the streames aryse not, I have found salt in great plenty as whyte as the salt of Mayo,³ congeled from the salt water which the spryng tyds bring into those poles, which could not be but by the benefit of a noble heat, of which salt I brought with me and gave to master Secretary Walsingham and to master Sanderson, as a rare thing to be found in those parts, and further, the same was of an extraordinary saltnes. And therefore it is an idle dreame that the ayre should there be insufferable, for ourselves have with the water of those seas made salt, because we desired to know whether the benefit of the sunne were the cause of this cogulation, what better confirmation, then, can there be then this.

¹ Sweden.

² Reindeer.

³ One of the Cape de Verds. See note 3, p. 133.

Island¹ is likewise inhabited and yeldeth haukes in great store, as fulcons, Jerfalcons, lanardes² and sparrow haukes, ravens, crowes, beares, hares and foxes, with horses and other kinde of cattell, upon which coast, in August and September, the yce is utterly dissolved, all which the premises are certainly verified by such as trade thither from Lubeck, Hambro, Amsterdam and England yerely ; then why should wee dread this fayned distemperature : from cold regions come our most costly furies, as sables beeing esteemed for a principall ornament, and the beastes that yeld us those furs are chiefly hunted in the winter ; how grievous then shall we thinke the winter to be, or howe insufferable the ayre, where this little tender beast liveth so well, and where the hunters may search the dennes and hauntes of such beastes through the woods and snow.

Upsaliensis affirmith that he hath felt the Sommer nights in Gotland scarcely tollerable for heate, whereas in Rome hee hath felt them cold.

The mountaynes of Norway and Swethland are fruitefull of metalls in which silver and copper are concoct and molten in veines, which may scarcely bee done with fornaces, by which reason also the vapors and hot exhalations pearcing the earth and the waters, and through both those natures breathing forth into the ayre, tempereth the quantitie thereof, making it tollerable, as wyttnes the huge bignes of whales in those seas, with the strength of body and long life of such beastes as live on the land, which thing could not bee except all thinges were there comodiously nourished, by the benefit of the heaven and the ayre, for nothing that in time of increase is hindred by any injury, or that is evill seed all the time it liveth, can prosper well.

. Also it is a thing undoubtedly knowne by experience, that upon the coastes of newfoundland (as such as the yse remayneth undissolved upon those shores), the wind being

¹ Iceland.

² Lanar, or lanarde, was a kind of hawk.

esterly comming from the seas, causeth very sharpe colde, and yet the same is sufferable, but comming from the shore, yt presently yeldeth heate abundantly according to the true nature of the scituation of the place, whereby it plainly appeareth that the very breth of the yse is rather the cause of this cold, then the distemporetur of the ayre.

Wherefore if in winter where is abundance of yse and snowe, the ayre is so sufferable as that traveling and hunting may be exercised, how much rather may wee judge the seas to be Navigable, and that in the deepest of winter, where there is neither yse nor snow that may yeld any such dampes or cold breathings, to the anoyance of such as shall take these interprises in hand. And therefore the Sommer in no sort to be feared, but some curious witt may object that the naturall anoyance of cold is prevented by reason of the travell of the body with other artificall provisions to defend the fury thereof, as also the whot vapours which the earth may yeld, whereof experience urgeth confession, but upon the seas it cannot be, sith it is a cold body subject to yeld great dampes and cold brethinges most offensive to nature. To the which I answere in the universall knowledge of all creatures, that God the most glorious, incomprehensible, and ever being, sole creatour of all thinges visible, invisible, rationall, irrationall, momentory and eternall in his divine providence, hath made nothing uncommunicable, but hath given such order unto all things whereby everything may be tollerable to the next, the extremities of elements consent with their next, the ayre is grosse about the earth and water, but thinn and hot about the fyre; by this providence in nature the sea is very salt, and salt (sayth Plinie) yeldeth the fatness of oyle, but oyle by a certayne native heate is of propertie agreeable to fire, then being all of such qualitie by reason of the saltnes thereof, moveth and stirreth up generative heat, &c. Whereby the sea hath a working force in the dissolution of

yse, for things of so great contrariety as heate and cold have together no affinitye in conjunction, but the one must of necessity avoyde, the seas not being able by the bandes of nature to step backe, doth therefore cause the coldnesse of the ayre (by reason of his naturall heate) to give place, whereby extremities being avoyded, the air must of necessitie remayne temperate, for in nature the ayre is hote and moyst, the colde then being but accidental is the soner avoided, and natures wrongs with ease redressed.

That under the Pole is the place of greatest dignitie.

Reason teacheth us and experience confirmeth the same, that the Sun is the onely sufficient cause of heat through the whole world, and therefore in such places where the Sunne hath longest continuance, the ayre there receiveth the greatest impression of heat, as also in his absence it is in like sort afflicted with colde. And as the heate in all clymates is indurable, by the eternal ordinance of the creator, so likewise the cold is sufferable by his everlasting decree, for otherwise nature should bee monstrous, and his creation wast, as it hath beene ydly affirmed by the most Cosmographicall writers, distinguishing the sphere into five zones, have concluded three of them to be wast, as vaynely created, the burning Zone betweene the two tropikes, and the two frozen zones, but experience having reprooved the grosenes of that errour it shall be needlesse to say farther therein. For although in the burning zone the sun beames are at such right angles as that by the actuell reverberation thereof, the lower region of the ayre is greatly by that reflection warmed, yet his equall absence breadeth such mitigation as that there we find the ayre tollerable, and the countries pleasant and fruitefull, beeing populus and well inhabited: so likewise under the pole being the center of the supposed frozen zone, during the time that the Sunne

is in the South signes, which is from the thirteenth of September unto the 10 of March, it is there more cold then in any place of the world, because the Sunne in all that time doth never appeare above the Horyzon ; but during the time that the Sunne is in the North signes, which is from the tenth of March unto the thirteenth of September, he is in continuall view to all such as posses that place, by which his continuall presence he worketh that notable effect, as that therby all the force of frysing is wholly redressed and utterly taken away, working then and there more actuall then in any other part of the world. In which place their continuall day, from the Sunne rising to the sunne setting, is equall to twenty sixe weekes and five days, after our rate : and their night is equall with twenty five weekes and three days such as we have, so that our whole yeere is with them but one night and one day, a wonderfull difference from al the rest of the world, and, therefore, no doubt but those people have a wonderfull excellencie and an exceeding prorogative above all nations of the earth and this which is more to be noted. In all other places of the world the absence and presence of the Sun is in equall proportion of time, having as much night as day, but under the Pole their artificiall day (that is the continuall presence of the Sunne before he sett) is nine of our naturall dayes, or two hundredth 16 houres longer then is there night, whereby it appeareth that they have the life, light, and comfort of nature in a higher measure then all the nations of the earth. How blessed then may we thinke this nation to be : for they are in perpetuall light, and never knowe what darkenesse meaneth, by the benefit of twylight and full moones, as the learned in Astronomie doe very well knowe, which people if they have the notice of their eternitie by the comfortable light of the Gospel, then are they blessed and of all nations most blessed. Why then doe we neglect the search of this excellent discovery, agaynst which there can be nothing sayd to hinder the same ? Why

doe we refuse to see the dignity of Gods Creation, sith it hath pleased his divine Majestie to place us the nerest neighbor thereunto? I know ther is no true Englishman that can in conscience refuse to be a contributor to procure this so great a happines to his countrey, whereby not onely the Prince and mightie men of the land shall be highly renowned, but also the Merchaut, tradesman, and artificer mightily enriched.

And now as touching the last objection that the want of skill in Navigation with curious instrumentes should be the hinderance or overthrow of this action. I holde that to bee so frivolous as not worth the answering, for it is wel knowne that we have globes in the most excellent perfection of arte, and have the use of them in as exquisite sort as master Robert Hues in his book of the globes use, lately published, hath at large made knowne, and for Horizontall paradox and great circle sayling I am myselfe a witnesse in the behalfe of many that we are not ignorant of them, as lately I have made knowne in a brieft treatise of Navigation naming it the Seamans Secreates. And therefore this, as the rest breadeth no hinderance to this most commodious discovery.

*What benefits would growe unto Englande by this passage
being discovered?*

The benefits which may grow by this discovery are copious, and of two sorts—a benefit spirituall and a benefit corporall. Both which sith by the lawes of God and nature we are bound to regard, yet principally we are admonished first to seeke the Kingdome of God and the righteousness thereof, and all thinges shall be given unto us.

And therefore in seeking the Kingdome of God we are not onely tied to the depe search of Gods sacred word and to live within the perfect lymits of Christianity, but also by al meanes we are bound to multiply and increase the flocke of the faithfull. Which by this discovery will be most

abundantly perfourmed to the preservation of many thousands which now most miserably are covered under the lothsome vayle of ignorance, neither can we in any sort doubt of their recovery by this passage discovered, Gods providence theroin being considered who most mercifully sayeth by the mouth of his prophet Esaias 66, I will come to gather all people and tongues, then shall they come and see my glory, of them that shall be saved. I will send some to the Gentils in the sea and the yls far of, that have not heard speak of me, and have not sene my glory, shall preach my peace among the Gentiles.¹

And in his 65 Chapter he farther sayeth, They seeko me that hitherto have not asked for me; they find me that hitherto have not sought me.²

And againe, Chapter 49, I will make waies upon al my mountains and my footpathes shall be exalted, and behold these shall come from farre; some from the North and West, some from the land of Symis, which is in the South.³ Then sith it is so appointed that there shal be one shepheard and one flocke, what hindreth us of England (being by Gods mercy for the same purpose at this present most aptly prepared) not to attempt that which God himselfe hath appointed to be performed, there is no doubt but that wee of England are this saved people by the eternal and infallible presence of the Lord, predestinated to be sent unto these Gentiles in the sea, to those ylls and famous kingdomes, ther to preach the peace of the Lorde, for are not we onely set upon Mount Sion to give light to all the rest of the world? Have not we the true handmayd of the Lord to rule us, unto whom the eternall majestie of God hath reveled his truth and supreme power of excellencye? By whom then shall the truth be preached, but by them unto whom the truth shall

¹ Isaiah lxvi, v. 18, 19. Davis is quoting from memory, and from the Bible of 1541.

² Isaiah lxv, v. 1.

³ Isaiah xlix, v. 11, 12.

be reveled? It is onely we, therefore, that must be these shining messengers of the Lord, and none but we, for as the prophet sayth, O how beautifull are the feet of the messenger that bringeth the message from the mountain, that proclameth peace, that bringeth the good tidings and preacheth health and sayth to Sion thy God is King,¹ so that hereby the spirituall benefit arising by this discovery is most apparant, for which, if there were no other cause, wee are all bound to labour with purse and minde for the discovery of this notable passage. And now as touching the corporall and worldly benefits which will thereby arise, our owne late experience leadeth us to the full knowledge thereof, as by the communitie of trade groweth the mightines of riches, so by the kinde and guide of such tradinges may grow the multiplication of such benefits, with assurance how the same may in the best sort be continued. In the consideration whercof, it is first to bee regarded with what commodities our owne country aboundeth, either naturall or artificiall, what quantity may be spared, and wher the same may with the easiest rate be gained, and how in his best nature unto us returned, all which by this passage shall be unto us most plentifully effected, and not onely that, but this also which is most to be regarded, that in our thus trading wee shall by no meanes enrich the next adjoyning states unto us, for riches breed dread, and povertie increaseth feare.

But here I cease fering to offend, yet it is a question whether it were better by an easy rate to vent our commodities far of, or by a more plentifull gayne to passe them to our neerer neighbours, and those therby more enriched then our selves. The premises considered wee finde our country to abound with woll, and wollen cloth, with lead, tin, copper, and yron, matters of great moment, wee also knowe our soyle to be

¹ Isaiah lii, v. 7. Davis quotes from the translation of 1541, except that he has "messenger" instead of "ambassador". The modern version has "him", and is differently worded.

fertill, and would, if trad did so permit, have equal imployment with any of our neighbours, in linnen cloth, fustians, seys,¹ grograms,² or any other forraine artificiall commodities, besides the excellent labours of the artsmen, either in mettallayne mechanicall faculties, or other artificiall ornaments, whereof India is well knowne to recieve all that Europe can afford, rating our commodities in the highest esteeme of valewe, which by this passage is speedily perfourmed, and then none of these should lie dead upon our handes as now they doe, neither should wee bee then ignorant as now we are in many excellent practises into which by trade wee should be drawne.

And by the same passage in this ample vent, we should also, at the first hand, receive all Indian commodities, both naturall and artificiall, in a far greter measure, by an easier rate, and in better condition then nowe they are by many exchaunges brought unto us. Then would all nations of Europe repayre unto England, not only for these forraine merchandizes by reason of their plenty, perfection, and easy rates, but also to passe away that which God in nature hath bestowed upon them and their countrie, whereby her majestie and her highnes successors for ever, should be monarks of the earth and commaunders of the Seas, through the abundance of trade her customes would bee mightily augmented, her state highly enriched, and her force of shipping greatly advanced, as that thereby shoo should be to all nations most dredful, and we, her subjects, through imployment, should imbrace abundance and be clothed with plenty.

The glory whereof would be a deadly horror to her adver-

¹ *Say*, fine woollen stuff manufactured, in those days, at Sudbury and Colchester.

² *Grogram*, from the French *Gros-grain*, coarse grain or coarsely woven. *Grogram* was stuff made of silk and mohair, thicker and coarser than ordinary taffeta.

saries, increase friendly love with al, and procure her majestie stately and perpetuall peace, for it is no small advantage that ariseth to a state by the mightines of trade: being by necessity linked to no other nation, the same also beeing in commodities of the highest esteeme, as gold, silver, stoncs of price, juels, pearls, spice, drugs, silkes raw and wrought, velvetts, cloth of gold, besides many other commodities with us of rare and high esteeme, whereof as yet our countrie is by nature deprived, al which India doth yeld at reasonable rates in great abundance, receiving ours in the highest esteeme, so that hereby plenty retourning by trade abroad, and no smale quantitie provided by industry at home, all want then banished in the abundance of her majesties royalty, so through dred in glory, peace, and love, her majestic should be the commanding light of the world and we, her subjects, the stars of wonder to al nations of the earth.

Al which the premises considered it is impossible that any true English hart should be staied from willing contribution to the performance of this so excellent a discovery, the Lords and subjectes spirituall for the sole publication of Gods glorious gossell. And the Lords and subjectes temporal, for the renowne of their prince and glory of their nation, should be ther unto most vehemently affected.

Which, when it shall so please God in the mightines of his mercy, I beseech him to effect. Amen.

THE SEAMANS SE CRETS.

Deuided into 2. partes, wherein is taught the
three kindes of Sayling, Horizontall, Paradoxall, and sayling vpon a
great Circle : also an Horizontall Tyde Table for the easie finding of
the ebbing and flowing of the Tydes, with a Regiment newly calcula-
ted for the finding of the Declination of the Sunne and many
other most necessary rules and instrument.
not heretofore seē forth
by any.

Newly corrected by the author *Iohn Davis* of *Sandridge*,
neere *Dorchester*, in the Countie of *Devon*. Gent.



Imprinted at London by *Thomas Dawson*,
dwelling neere the three Cranes in the Vine-tree,
and are there to be sold. 1607

To the right honourable Lord Charles Haward,
Baron of Effingham ; Knight of the noble order of the Garter ;
Lieutenant of her Maiesties Counties of Sussex and Surrey ;
Constable of her Maiesties Honor and Castle of Windsor ;
Lord High Admirall of England, Ireland, and Wales,
and of the Dominions and Isles of the same, of the
towne of Callis and marches thereof, Normandy,
Gascony, and Greynes ; Captaine generall of her
Maiesties Seas and Nauie royall, and one of
her Maiesties most honorable priue Coun-
sell, John Daus wisheth increase of
honour and perfect felicitie.



RIGHT Honourable and my
especial good Lord, as by
the instinct of nature all men
are desirous of understanding,
so it is likewise ingrafted by
the same benefite of nature,
in the hearts of true nobi-
litie, not only to excell the
vulgare sort, but also to
cherish, support, and countenance all such as shall in
due course prosecute their vocation : and as such prac-
tises either speculative or mechanically shall receive fa-
uourable place in the honourable opinion of nobilitie, by
so much the more shall the practiser bee esteemed : which is
the cause that at this time imboldeneth me to present vnto
your most honourable fauour this small treatise of Naviga-
tion, being a breefe collection of such practises as in my
seuerall voyages I have from experience collected. Among
which in three seuerall attempts for the discouerie of the

Northwest passage, thereby to finde a short and Nauigable course vnto the rich and famous Countries of Cathayo, China, Pegu, the Isles of Molucan and Phillipina, that thereby to the great and inestimable benefite of our country, there might be a rich and plentiful trade procured betweene vs and the sayd nations in short time to be performed, and with great saftie in regarde of the course : which action and discouery (by meanes of that honourable Counsellor Sir Fraunces Walsingham Knight, principall Secretary to her Maiestie) was with good resolution accepted by the Merchants of London, but in the decay of his honourable life,¹ the attempt was likewise quaild: but howsoever mens mindes alter, yet vndoubtedly, there is a passage nauigable, and easie to be performed by that course (whensoeuer it shall please God to reucale the same) by inuincible reasons, and sufficient experience to be proued ; and although before I entred into that discouery, I was sufficiently perswaded of the certainty thereof, by historical relation substantially confirmed where to the aduenturers I made sufficient prooffe, but especially to my worshipfull good friend Maister William Sanderson,² the onely Merchant that to his great charges with most constant trauaile did labour for the finishing thereof : yet I thanke God that of late it hath bin my very good chance to receive better assurance then euer before of the certaintie of that passage, and such was my vehement desire for the performance thereof, that thereby I was onely induced to goe with M. Candish in his second attempt for the South Sea, vpon his constant promise vnto me, that when wee came back to the Callifornia, I should haue his Pinnace with my owne Barck³ (which for that purpose went with me to my great charges) to search that Northwest discouery vpon the backe partes of America, but God hath

¹ Sir Francis Walsingham died on April 6th, 1590.

² See Introduction.

³ The *Delight*, partly owned by Adrian Gilbert.

otherwise disposed our purposes in his diuine Judgements, for M. Candish being halfe way through the straights of Magilane, and impatient of the tempestious furiousness of that place, having all his Shippes and company with him, returned for Brasill, by the authoritie of his cōmaund, when with a leading wind we might have passed the same, and returning more than 80 leagues towarde Brasill, myselfe being in his Ship named the Desire, without Boate, Oares, Sayles, Cables, cordage, victuals or health of my company sufficient for that attempt was seperated in a freit of weather, and forced to seeke the next shore for my releefe, and recouering a harborow by vs named Port Desire,¹ being in the lati. of 48 deg. did there repaire my most miserable wantes, and there staying 4 moneths in most lamentable distress, did againe conclude with my company to give another attempt to passe the straights, as my beste meane to gaine releefe. And three times I was in the South Seas, but still by furious weather forced back againe: yet notwithstanding all this my labor to perfourme the voyage to his profite, and to saue myself (for I did aduenture and my good freinds for my sake 1100 pounds in the action) M. Candishe was content to account me to be the authour of his ouerthrow, and to write with his dying hand that I ranne frome him, when that his own Shippe was returned many moneths before me.

I am bolde to make this relation vnto your Lordship, onely to satisfie your Honor of my conuersation, for were I faultie of so foule a crime, I were worthy of ten thousand torments, in presuming to present this Treatise to your honourable Lordship and now referring my cause to your Lordships consideration, I will againe returne to my purpose.

In those Northwest voyages where Nauigation must be executed in most exquisite sort, in those attempts I was

¹ So named by Cavendish during his voyage of circumnavigation, on December 3rd, 1586, when he was on board this same vessel, the *Desire*.

enforced to search al possible meanes required in sayling by which occasion I have gathered together this breefe treatise, which with myself I do dedicate to your honourable protection, being desirous if it lay in my power, to doe farre g(r)reater matters in your Lordship service, hoping of your honourable pardon, because it is only done to shew my dutifull affection, and not for any singularitie that the worke containeth. For I think there be many hundreds in England that can in a farre greater measure and more excellent methode expresse the noble art of Navigation, and I am fully perswaded that our Countrie is not inferiour to any for men of rare knowledge, singular explication, and exquisite execution of Artes Mathematicke, for what Strangers may he cōpared with M. Thomas Digges¹ Esquire, our Countryman the great Archmastric, and for Theoricall speculations to most cunning calculation, M. Dee² and M. Thomas

¹ Thomas Digges was the son of Leonard Digges, mathematician and surveyor, by Sarah (or Bridget?), sister of Sir Thomas Wilford of Hartridge. He was born at Wotton, between Canterbury and Dover, which place he sold on the death of his father. He was at Oxford, and was afterwards appointed by the Earl of Leicester to be Muster Master General for the Queen's forces in the Low Countries, where he did most valuable service. He was a profound mathematician. In 1573 he published *Ale sive scalæ Mathematicæ*. In 1579 appeared his *Arithmetical Military Treatise, containing as much arithmetic as is necessary towards military discipline*, and also a geometrical treatise called *Stratisticos*, dedicated to Leicester. In 1592 was published his *Perfect Description of the Celestial Orbs, according to the most ancient doctrine of Pythagoras*, and in 1599 he wrote *England's Defence: a treatise concerning invasion*, which was not published until 1686. He left unpublished at his death treatises on the art of navigation, on naval architecture, and on artillery. Thomas Digges married Agnes, daughter of Sir William St. Leger, by Ursula, daughter of George Nevill, Lord Abergavenny, and had two sons, Sir Dudley Digges, the diplomatist, and Leonard. He died on the 24th of August, 1595, in London, and was buried in the church of St. Mary, Aldermanbury.

² Dr. Dee was born on July 13, 1537, and died in 1607. He was an eminent mathematician and astrologer, and a great promoter of Davis's first voyage of discovery towards the north-west. He lived at Mortlake, where he was visited and consulted by the Queen, and many great

Heriotts¹ are hardly to be matched : and for the mechanicall practises drawn from the Artes of Mathematicke, our Country doth yeelde men of principal excellencie, as M. Emery Malle-neux² for the exquisito making of Globes bodies, and M. Nicholas Hellyar³ for the singularitie of portraiture haue the prayso of Europe, M. Baker⁴ for his skill and surpassing people. The passages in his memoirs in which he mentions Davis are quoted in the Introduction.

¹ Thomas Herriot was born at Oxford in 1560, and died in London on July 2, 1621. He went with Sir Walter Raleigh to Virginia in 1588, and published on his return *A Brief and True Report of the new-found Land of Virginia*. It is given in *Hakluyt*. He was afterwards patronised by the Earl of Northumberland, and attended him faithfully during his long captivity in the Tower. Herriot made great improvements in algebra, and corresponded with Kepler. He died of a dreadful ulcer on his lip, brought on by his habit of holding instruments with verdigrease on them in his mouth.

² See Introduction.

³ Nicholas Hilliard was a Devonshire man, and probably well known to Davis. He was born at Exeter in 1547, and was first brought up as a goldsmith. He, however, became an eminent painter and engraver, studying the works of Holbein. He painted portraits of Mary Queen of Scots, Queen Elizabeth, and James I. Dr. Donne, in his poem on the storm encountered by the Earl of Essex, on his voyage to the Azores, wrote :—

“ A hand and eye

By Hilliard drawn, is worth a historye

By a worse painter made.”

Hilliard engraved portraits of James I and his family, and employed Simon Passe on the same work. He died on January 7th, 1619, aged seventy-two, and was buried in the Church of St. Martin's-in-the-Fields, in which parish he resided.

⁴ Matthew Baker was one of the Queen's ship-builders, certainly as early as 1575. In 1579 Peter Pett and Matthew Baker signed an agreement for keeping the Queen's ships in repair. In 1583 Pett and Baker drew up plans for the improvement of Dover Harbour, which were adopted. The same two ship-builders made a report on the state of the Navy in October 1587 ; and Baker proposed to build four ships on the model of the *Revenge* in 1588. In 1591 Her Majesty's shipwrights were Matthew Baker, Richard Chapman, Joseph Pett, and John Adye.

In April 1604 Baker had retired, for there is the grant in reversion to Phineas Pett, after Matthew Baker and Joseph Pett, of a pension of 12d. a day. But the Petts were more famous as ship-builders than Baker. Peter Pett, the younger, died in 1652, and his son, Sir Phineas Pett, lived until 1686.

grounded knowledge for the building of Ships advantageable to all purpose, hath not in any nation his equall.

And now that I may returne to the painefull Seaman, it is not vnknown to all nations of the earth, that the English goeth before al others in the practises of sayling, as appeareth by the excellent discouery of Sir Fraunces Drake in his passage through the straights of Magilane, which being then so rawly knowne, he could not have passed, vnlesse he had beene a man of great practise and rare resolution: so much I boldly say, because I haue seene and tested the frowardness of the place, with the great vnlikelyhoode of any passage to be that way.

I might here repeat the most valient and excellent attempts of Sir Hugh Willoughbie, Sir John Hawkins, Sir Humphry Gilbert,¹ and your Lordships servant M. George Raymond,² with diuers other that haue given most resolute attempts in the practises of Nauigation, as well for the discouery as other execution, whereby good prooffe is made, that not onely in the skill of Nauigation, but also in the mecanicall execution of the practises of sayling, wee are not to be matched by any nation of the earth.

And sith Nauigation is the meane whereby Countreyes are discouered, and communitie drawne betweene nation and nation, the worde of God published to the blessed recovery of the forraine ofcastes from whence it hath pleased his diuine Maiestie as yet to detayne the brightnes of his glorie: and that by Nauigation commonweales through mutuall trade are not only sustained, but mightely enriched, with how great esteeme ought the painefull Seaman to be embraced by whose hard aduentures such excellent benefites are atcheiued, for by his exceeding great hazzards the

¹ See Introduction, for an account of Sir Humphrey Gilbert.

² George Raymond was a distinguished sea captain. He is mentioned by Sir Richard Hawkins in his *Observations* (p. 110). He commanded the *Penelope* in the first English voyage to the East Indies in 1591, and was lost off the Cape of Good Hope.

forme of the earth, the quantities of Countries, the diuersitie of nations and the natures of Zones, Climats, Countries and people, are apparently made known vnto vs. Besides, the great benefites mutually interchanged betweene nations, of such fruits, commodities, and artificiall practises wherewith God hath blessed each particular country, coast and nation, according to the nature and situation of the place.

For what hath made the Spaniard to be so great a Monarch, the Commander of both Indias, to abound in wealth and all natures benefites, but only the painefull industrie of his Subiects by Nauigation. Their former trade was only figs, oranges, and oyle, but now through Nauigation is brought to be golde siluer pearles, silkes, and spice, by long and painefull trade recouered. Which great benefites onely by her Maiesties loning clemencie and merciful fauour he doth possesse: for if her highnes and her most honourable Lordes would not regard the small distance betweene her dominions and those famous rich Kingdomes, the easines of the passage being once discouered (the Northwest I mean) with the full sufficiency of her highnes Subiects to effect the same, there could then be no doubt, but her stately seate of London should bee the storehouse of Europe, and a nurses to all nations, in yeelding al Indian commodities in a far better condition, and at a more easie rate then now brought vnto vs, exchanging commodities of our owne store, with a plentifull returne at the first hand, which now by many exchanges are brought vnto vs.

Then should the Spaniard againe returne to his old trade, and our sacred Soueraigne be seated the Commaunder of the earth: which trade and most fortunate discouery, we aboue all nations ought most principally to regard, because of the singularitie and inuincible force of our Shipping, which is not only the commaunding fortresse of our Country, but also the dread of our aduersary, and glory of our nation: wherein we doe in no sort flatter our selues for it was made

apparent to all nations of the earth, by the late most famous Conquest that her Maiestie had against the huge supposed inuincible floete of the Spaniard, being by her nauie vnder the cōmand of your Lordship who there in person and in place of her Maiestie, to your eternal glorious fame did disgrace their glory and confound their force, and manifest their weakness by dastardly flight, through God's prouidence and your Lordships stately resolution.

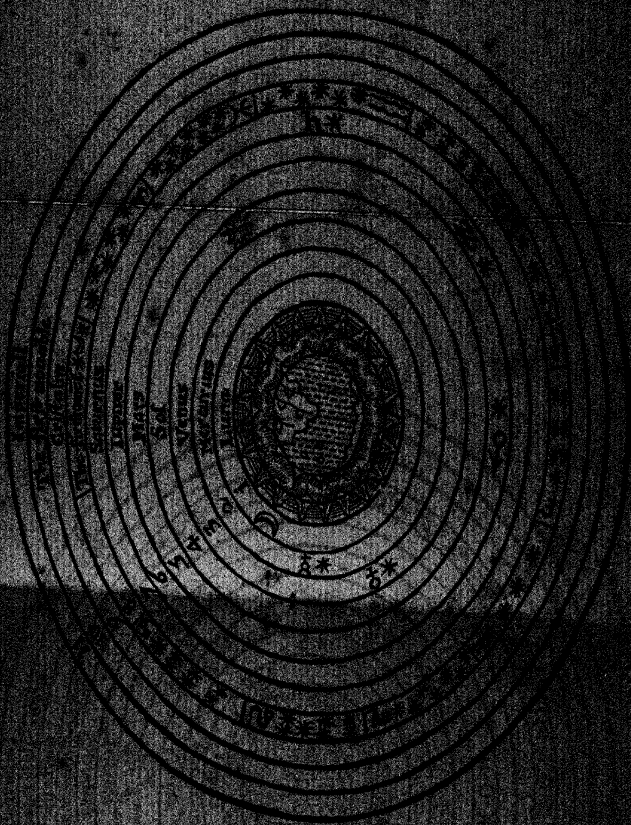
Then sith Navigation is a matter of so great moment, I suppose that euery man is bound in duty to giue his best furtherance thereunto : among whom as the most vnmeeto of all, yet wishing all good to the painefull traouller, I haue published this short treatise, naming it the Seamans Secrets, because by certaine questions demaunded and answered, I haue not omitted any thinge that appertaineth to the secret of Navigation, whereby if there may grow any increase of knowledge or ease in practise, it is the thing which I chiefly desire.

To manifest the necessary conclusions of Navigation in breefe and shorte termes is my only intent, and therefore I omit to declare the causes of tearmes and diffinition of artificiall wordes, as matter superfluous to my purpose, neither haue I laid downe the cunning conclusions apt for Schollars to practise vpon the shore, but onely those things that are needfully required in a sufficient Seaman : beseeching your honourable Lordship to pardon my bolnesse, and with your fauourable countenance to regard my dutifull affection, I most humbly commit your good Lordship to the mercies of God, who long preserve your health with continuall increase of honour.

From Sandrudge by Dartmouth the 20,
of August. 1594.

Your Lordships in all dutifull service
to command,

JOHN DAVIS.



FIRST BOOKE OF THE SEAMANS SECRETS.

What is Navigation?

NAVIGATION is that excellent Art which demonstrateth by infallible conclusion how a sufficient Ship may bee conducted the shortest good way from place to place by Corse and Trauers.

What are these Infallible Conclusions?

Navigation consisteth of three partes, which, being well vnderstood and practised, are conclusions infallible, whereby the skilful Pilote is void of all doubt to effect the thing purposed, of which the first is the Horizontall Navigation,¹ which manifesteth all the varieties of the Ship's motion within the Horizontall plaine superficies, where euery line drawne is supposed a parallel.

The second is a paradoxall² or Cosmographicall Nauigation, which demonstrateth the true motion of the Ship vpon any course assigned in longitude, latitude, and distāce, either particular or general, and is the skilful gathering together of many Horizontall Corses into one infallible and true motion paradoxall.

The third is great Circle Nauigation,³ which teacheth how

¹ This is what we call plane sailing.

² Paradoxall sailing evidently means sailing on the spiral a ship would describe if she continued sailing round the world on any course except east and west, or north and south; and might be defined as globular sailing.

³ It thus appears that Great Circle sailing was well known to Davis.

vpon a great Circle drawne betweene any two places assignde (being the onely shortest way betweene place and place) the Ship may bee conducted, and is performed by the skilfull application of Horizontall and paradoxall Navigation.

What is a Corse ?

A Corse is that paradoxall line which passeth betweene place and place, according to the true Horizontall position of the Magnet, vpon which line the Ship, prosecuting her motion, shall be conducted betweene the sayd places.

What is a Trauers ?

A Trauers is the varietie or alteration of the Shippes motion vpon the shift of windes, within any Horizontall plaine superficies, by the good collection of which Trauerses the Ship's vniforme motion or Corse is given.

What Instruments are necessary for the execution of this excellent skill ?

The Instruments necessario for a skilfull Seaman are a Sea Compasse, a Crosse staffe, a Quadrant, an Astrolobe, a Chart, an instrument magneticall,¹ for the finding of the variation of the Compasse, an Horizontall plaine Sphere, a Globe, and a paradoxall Compasse,² by which instruments all conclusions and infallible demonstrations, Hidrographicall, Geographicall, and Cosmographicall are without controlement of errour to be performed ; but the Sea Compasse, Chart, and Crosse staffe are instruments sufficient for the seaman's vse, the Astrolabic and Quadrant being instruments very vncertaine for Sea observations.

¹ The instrument magneticall must have been an azimuth compass.

² The paradoxall compass must have been some instrument showing how the line of the course cuts the several meridians, these meridians being drawn upon their proper inclination.

What is the Sea Compass?

The Sea Compass is a principall instrument in Nauigation, representing and distinguishing the Horizon, so that the Compass may conveniently be named an Artificial Horizon, because by it are manifested al the limits and distinctions of the Horizon required to the perfect vse of Nauigation, which distinctions are the 32 points of the Compass, whereby the Horizon is deuided into 32 equall partes, and euery of those points hath his proper name, as in the figure following appeareth. Also euery point of the compass doth containe degrees, minuts, seconds, and thirds, etc. Which degrees are called degrees of Azumuth, whereof there are in euery point $11\frac{1}{4}$, so that the whole Compass or Horizon containeth 360 degrees of Azumuth, for if you multiply $11\frac{1}{4}$ degrees, the degrees that ech (*sic*) point containeth, by 32, the points of the Compass, it yeeldeth 360 degrees of the Compass. And of minutes each point containeth 45,¹ being $\frac{3}{4}$ of an hower, so that the whole Compass is hereby deuided into 24 howers, by which accompt there are in an hower 15 degrees, so that euery degree containeth 4 minutes of time for an hower consisting of 60 minutes, hath for his fifteenth part 4 minutes of time, and in every minute their (*sic*) is 60 seconds, and euery second containeth 60 thirds, either in degrees applied to time or degrees applied to measure, so that the generall content of the Compass is 32 points, 360 degrees, and 24 howers, with their minutes, seconds, and thirds.

What is the vse of the 32 points of the Compass?

The vse of the 32 pointes of the Compass is to direct the skilful Pilote by Horizontall trauers how hee may conclude the corse or paradoxall motion of his ship, thereby with the greater expedition to recover the place desired, because

¹ Of time.

they deuide the Horizon into such limits as are most apt for Nauigation. They doe also distinguish the windes by their proper names, for the winde receiueth his name by that parte of the Horizon from whence it bloweth.

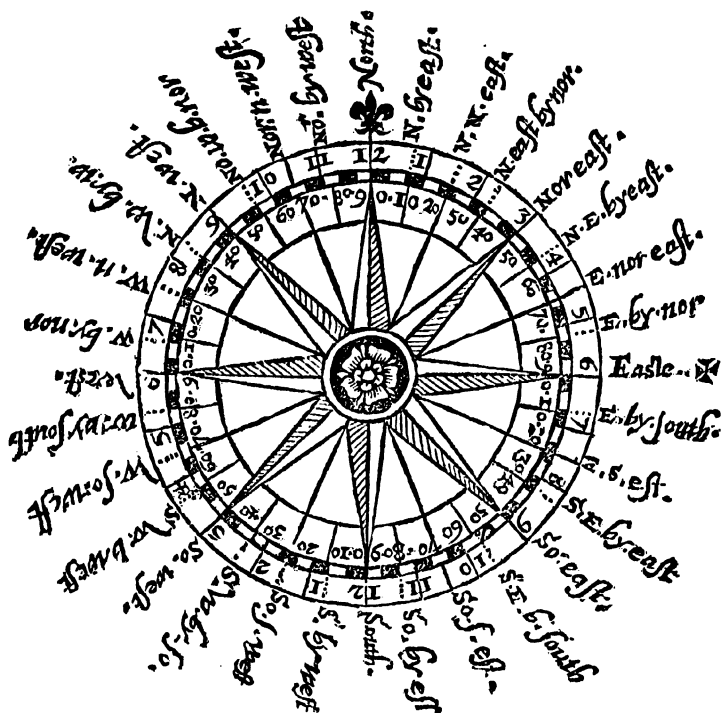
What is the vse of 360 degrees of Azimuth?

By the degrees of Azimuth is knowne the quantitie of the rising and setting of the Sunne, Moone, and Starres, whereby is knowne the length of the dayes and nightes in all climates, and at all times they also show a most precise Horizontall distinction of the motion of the Sunne, Moone, and Starres, whereby the certainty of time is measured, and the variation of the Compasse, with the Pole's height, is ingeniously knowne at all times, and in all places by the helpe of the Globe.

How is the hower of the day knowne by the Compasse?

It hath beene an ancient custom among Mariners to deuide the Cōpasse into 24 equall partes or howers, by which they have vsed to distinguish time, supposing an East Sunne to be 6 of the clocke, a South-east Sunne 9 of the clocke, and a South Sunne 12 of the clocke, etc., as in the figure following shall plainely appeare. But this account is very absurd, for with vs in England (the Sunne having his greatest North declination) it is somewhat past 7 of the clocke at an East Sunne, and at a Southeast Sunne it is past 10 of the clocke: also when the Sunne is in the Equinoctiall the Sunne is halfe the day East and halfe the day West to all those that bee vnder the same, so that the Sunne then and to those people vseth but 2 points of the Compasse to performe the motion of 12 howers: therefore the distinctions of time may not wel be given by the Compasse vnlesse the Sunne be vpon the Meridian, or that you be farre toward the North, in such places where the Sunne's Horizontal motion is very oblique, for there the hower may be given

by the Compassee without any great errour, but elsewhere it cannot. Therefore those that traueil must either vse the Globe or an Equinoctiall diall, by whom time may be most certainly measured, if ther be good consideration of the variation of the needle by which the Equinoctiall diall is directed, for this is a generall thing to be regarded, as well



in the Compassee as in any dials or other instruments, or conclusion whatsoever wherein the vse of the needle is required; that vnlesse there be good regard vnto the variation of the same there can no good conclusion follow of any such practises.

What is the next necessarie thing to be learned ?

Having perfectly learned the compasse, the next necessarie thing for a Seaman to know is the alteration or shifting of tydes, that thereby he may with the greater safetie bring his Ship into any barred Port, Hauen, Creeke, or other place where tydes are to be regarded. And this difference of tydes in the alteration of flowing and reflowing is by long experience found to be gouerned by the moone motion, for in such proportion of time as the Moone doth separte herselfe from the Sunne by the swiftnes of her naturall motion: in the like proportion of time doth one tide differ from another, therefore to vnderstand this difference of the Moone's motion is the onely meane whereby the time of tydes is most precisely knowne.

Of the Moone's motion.

You must vnderstand the Moone hath two kinde of motions, a naturall motion and a violent motion. Her violent motion is from the East toward the West, caused by the violent swiftnes of the diurnal motion of primum mobile, in which motion the Moone is carried about the earth in 24 howers, and 50 minuts nerest one day with another, for although the diurnall period of the first mouer be performed in 24 howers, yet because the Moone every day in her slowest naturall motion moueth 12 degrees, therefore she is not carried about the earth vntill that her motion be also caried about, which is in 24 howers and 50 minutes neerest.

Her naturall motion is from the West towards the East, contrary to the motion of the first moouer, wherin the Moone hath 3 differces of moouing a swift motion, a meane motion, and a slow motion, all which is performed by the diuine ordinance of the Creator in 27 dayes and 8 howers neerest, through all the degrees of the Zodiac.

Her slowe motion is in the point of Auge or apogee, being then farthest distant from the earth, and then she

moueth in euery day 12 degrees. Her swift motion is in the opposite of auge or perigee, being then nerest vnto the earth, at which time she moueth 14 degrees, with some small difference of minutes in euery 24 howers.

Betweene those two points is her meane motion and then she moueth 13 degrees nerest: all which differences are caused by the excentricity of her Orbe wherein she moueth, and are onely performed in the Zodiac, but the Seamen for their better ease in the knowledge of tides, haue applied this the Moones motion to the points, degrees, and minutes of the Compasse, wherby they haue framed it to be an Horizontal motion which sith by long practise is found to bee a rule of such certaintie, as that the error thereof bringeth no danger to the expert Seaman, therefore it is not amisse to followe their practised precepts therein.

In euery 29 daies 12 howers 44 minutes, one with another through the yeere, the Sunne and Moone are in coniunction, and therefore that is the quantitie of time betweene change and change, for although the Moone in 27 daies and 8 howers performing her naturall motion, doth returne to the same minute of the Zodiac from whence she departed, yet being so returned shee doth not finde the Sunne in that part of the Ecliptick where she left him, for the Sunne in his naturall motion mouing euery day one degree towards the East, is moued so far from the place where the Moone left him, as that the Moone cannot ouertake the Sunne to come in coniunction with him, vntil she haue performed the motion of 21 daies 4 howers, and 44 minutes neerest, more then her natural reuolution, and that is the cause wherfore there are 29 daies, 12 howers, 44 minutes betweene change and change one with another through the whole yere: but the Seaman accompteth the Moones motion to be vniforme in all places of the Zodiac alike, limitting her generall seperation from the Sunne to be such as is her slowest natural motion, which is 12 degrees or 48 minutes of time, in euery

24 howers, by which accompt there are 30 dayes reckoned betweene change and change, being 11 howers 16 minutes more then in truth there is; but because this difference breedeth but smal errour in their accompt of tides, therefore to alter practised rules where there is no vrgent cause were a matter friuolous, which considered, I think it not amisse that we proceed therein by the same methodo that commonly is exercised.

Allowing the Moone in every 24 howers to depart from the Sunne 12 degrees, or 48 minutes of time, and in this seperation the Moone moueth from the Sunne Eastwards, vntill she be at the ful, for betweene the change and the full it is called the Moone's seperation from the Sunne, in which time of application she is to the Westward of the Sunne, as in her seperation she is to the Eastward, or I may say in the Seaman's phrase, all the time of her application she is before the Sunne, and in the time of her separation she is abaft the Sunne.

Then if the Moone doe moue 48 minutes of time in 24 howers it followeth that she doth moue 24 minutes in 12 howers, and in 6 howers she moueth 12 minutes, therefore euery hower she moueth 2 minuts, and such as is the difference of her motion such is the alteration of tides, and therefore euery tide differeth from the other 12 minutes, because there is 6 howers betweene tide and tide, and in euery hower the course of flowing or reflowing altereth 2 minutes, whereby it appeareth that in 24 howers the foure tides of flowing and reflowing doe differ 48 minutes of time.

And sith the whole knowledge of this difference or alteration of tides, as also the quantitie of the Moone's separation and application to and from the Sunne dependeth vpon the knowledge of the Moone's age, it is therefore necessarie that you learne how the Sunne may be knowne.

For the performance whereof there are two numbers especially required, named the Prime and the Epact, for by the

prime the epact is found, and by helpe of the Epact the Moones age is knowno.

Of the Prime or Golden number.

The Prime is the space of 19 yeres, in which time the moone performeth al the varieties of her motion with the Sunne, and at the end of 19 yeres beginneth the same resolution againe, therefore the Prime neuer exceedeth the number of 19, and this prime doth alwayes begin in January, and thus the prime is found: vnto the yeere of the Lord wherein you desire to know the prime addo 1, then deuide that number by 19, and the remaining nūber, which cometh not into the quotient, is the prime. Example in the yeere of our Lord 1590. I desire to know the prime, therefore I adde 1 vnto that yeere, and then it is 1591, which I deuide by 19, and it yeeldeth in the quotient 83; and there remaineth 14 vpon the diuision, which commeth not into the quotient, which 14 is the prime in the yeere of our Lord 1590.

$$\begin{array}{r}
 1590 \\
 1 \\
 \hline
 1591
 \end{array}
 \qquad
 \begin{array}{r}
 1 \quad 1 \\
 4 \\
 774 \\
 1591 \text{ (83)} \\
 199 \\
 1
 \end{array}$$

The Epact is a number proceeding from the overplus of the solar and lunar yeere, which number neuer exceedeth 30, because the Moone's age neuer exceedeth 30, for the finding whereof this number onely serueth: and thus the Epact is knowne, which Epact doth alwaies begin in March. Multiplie the prime by 11 (beccing the neereest difference between the solar and lunar yeere), deuide the product by

1 There must be a misprint here. The sum should be—

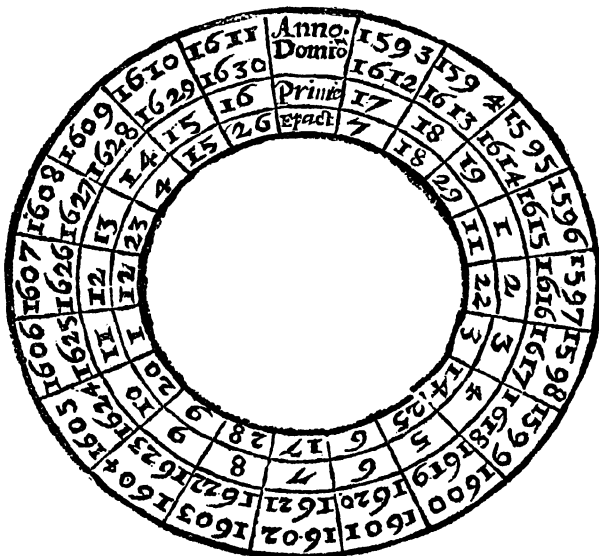
$$\begin{array}{r}
 19) 1591 \text{ (83)} \\
 152 \\
 \hline
 71 \\
 57 \\
 \hline
 14
 \end{array}$$

30, and the remainder is the Epact. Example in the yeere of our Lord 1590. I would know the Epact. First I seeke the prime of that yeere, and finde it to be 14. I therefore multiply 14 by 11, and that yœldeth 154, which, being deuided by 30, it giveth in the quotient 5, and there remaineth 4 vpon the diuision, which 4 is the Epact in the yeere 1590, which, beginning in March, doth continue vntill the next March of the yeere 1591.

$$\begin{array}{r}
 14 \\
 11 \\
 \hline
 14 \\
 14 \\
 \hline
 154
 \end{array}
 \quad (4)5$$

Of the solar and lunar yeere.

The solar yeere or the Suns yeere consisteth of 12 moneths, being 365 daies, and about 6 howers, the lunar yeere or the Moones yeere containeth 12 Moones, and euery Moone hath 29 daies, 12 howers, 44 minutes neerest, which



amount vnto 354 dayes, 5 howers, 28 minutes, the content of the lunar yeere, which being subtracted from 265 dayes 6 howers, there resteth 11 dayes and 32 minutes, the difference betweene the sayd yeeres, from which difference the Epact commeth.

By this Table the prime and Epact may for euer be found, for when the yeeres be expired you may begin againe, and continue it for euer at your pleasure.

The first circle containeth the yeeres of our Lord, the second the prime, and the third and inner circle sheweth the Epact: vnder euery yeere you shall finde his prime and Epact, the prime beginneth in Januarie, and the Epact in March.

How to find out the Moones age.

First consider the day of the moneth wherein you seeke the Moones age, then note how many moneths there are betweene the saydo moneth and March, including both moneths, vnto those numbers adde the Epact of that yeere, that is, you must adde into the summe the day of the moneth betweene March and your moneth, reckoning both moneths and the Epact, all which numbers ioyened together, if they exceede not 30, is the Moones age; if they be more then 30 cast away 30 as often as you can, and the remainder is the Moones age; if it be iust 30 it is then new Moone; if 7, it is the first quarter day; if 15, it is full Moone; if 22, it is then the last quarter day, and thus the Moones ago is found for euer.

The number of moneths.

And now being able for all times, either past, present, or to come, to giue the Moones age, I think it good by a few questions couement¹ for the Seamans practice to make you vnderstand the necessary vse thereof.

For the account of Tydes.

When you desire to know the tyme of full Sea in any place at all such seasons as occasion shall require, you must

¹ Convenient?

first learne what Moone maketh a full Sea in the same place, that is, vpon what point of the Compasse the Moone is when it is full Sea at the said place; you must also know what hower is appropriated to that point of the compasse, as before is shewed: for vpon the change day it will alwaies be full Sea in that place at the same instant of time, by which considerations you must thus proceed for the search of tydes.

Multiplie the Moones age by 4, deuide the product by 5, and to the quotient adde the hower, which maketh full Sea in that place vpon the change day, if it exceede 12 cast away 12 as oft as you may, and then the hower of full Sea remaineth, and for euery 1 that resteth vpon your diuision, allow 12 min. to be added to the howers, for 2, 24 minuts, for 3.36, and for 4, 48 minuts, for more then 4 will never remaine, and thus you may know your tides to a minute. Example, the Moone being twelue daies olde, I desire to know the time of full Sea at London: first, it is found by experience, that a Southwest and Northeast Moone makes full sea at London, next, I consider that 3 of the clocke is the houre appropriated to that point of the compasse, which number I keepe in memory, then I multiplie the Moones age, being 12, by 4, and that yeeldeth 48, which being deuided by 5 it giueth in the quotient 9, and three remayneth, I adde the quotient 9 to the hower 3 and it maketh 12 howers, and for the remaining number 3 I also adde 36 minutes, so that I find when the Moone is 12 dayes old, it is 12 of the clocke, and 36 minutes past, at the instant of full sea at London: by this order you may at all places and times know the certainty of your tides at your pleasure. But those that are not practised in Arithmetick may account these tides in this sorte, knowing how many dayes old the Moone is, he must place the Moone vpon that point of the compasse which maketh full Sea at the place desired, and then reckoning from that point with

the sunne, according to the diurnal motion, must accompt so many points, and so many times 3 minuts as the Moon is daies old, that is for euery day one point and 3 minutes, and there finding the Sun, he must consider what is the hower allowed to that point where he findeth the Sunne, for that is the hower of full Sea. As, for example, the Moone being 12 daies old, I desire to know the hower of full Sea at London, nowe finding by former experience, that a Southwest Moone maketh full Sea at London, I therefore place the Moone upon the point Southwest, then I accompt from the point southwest 12 points, reckoning with the Sunne according to the diurnall motion, Southwest and by west for the first point, West Southwest for the second, West by South for the third, West for the fourth point, and so forth, vntill I come to North, which is 12 points from Southwest, and because the Moone moueth 3 minutes more than a point in euery day, I therefore adde three times twelue, which make 36 minutes to the point North, at which place I finde the Sunne to be, and knowing that twelue of the clocke is appropriated to the point North, I may therefore boldly say that at twelue of the clocke, 26 minutes past, it is full Sea at London, when the Moone is twelue dayes olde, which 36 minutes are added, because the Moone hath moued 36 minutes more than twelue points in those 12 daies, which is one point and 3 minutes for euery day as before.

Heere followeth a very necessary Instrument for the Knowledge of the Tydes, named an Horizontall tyde Table.¹

Of this Instrument and his parts.

This necessary instrument for the yong practising seamans use, named an Horizontall tyde Table, whereby he may shift his Sun and Moone (as they terme it), and know

¹ Diagram wanting in British Museum copy of *Seaman's Secrets*.

the time of his tides with ease and very certainly, besides the answering of many pleasant and necessary questions used amongst Mariners. I have contrived into this methode, only for the benefit of such yong practisers in Nauigation.

The first part of this instrument is a Sea Compasse, deuided into 32 points or equall partes, the innermost circle of which Compasse is deuided into 24 howers, and euery of those into 4 quarters, each quarter being 15 minutes, and against euery point of the Compasse those places are layde downe, in which places it is full Sea when the Moone cometh upon the same point, so that whatsoever is required as touching time, or the points of the Compasse is there to be knowne.

The next moucable circle upon this Compasse is limited to the Sunne, upon whose index the sunne is layd downe, which circle is deuided into 30 equall parts or daies, signifying the 30 daies between change and change: according to the Seamans accompt, so that whatsoever is demanded as touching the age of the Moone, is upon that circle to be knowne.

The vppermost moucable circle is applied to the Moone, upon whose index the Moone is laid downe, which is to be placed either to the points and partes of the Compasse, or to the time of her age, as the question requireth, which considered, the vse of this instrument is largely manifested by these questions with their answers following.

How to know the hower of the night by the Moone, being vpon any point of the Compasse by the Instrument.

1.—Q. The Moone 10 daies olde, I demaunde what it is a clocke, when she is East Northeast?

1.—A. In this question the Moones age and the point of the Compasse is giuen, therby to know the hower. I therefore place the index of the Moone vpon the point East Northeast, there keeping the same not to be moued, then because the Moone is 10 dayes olde I moue the index of the

Sunne vntill I bring the tenth day of the moones age vnto the index of the moone, and there I looke by the Index of the Sunne, and find vpon the Compasse that it is twelue of the clocke at noone, and 30 minutes past when the moone is vpon the point East Northeast, being 10 dayes olde.

2.—Q. The Moone being twelue dayes olde, I demaund at what hower she will be vpon the point S.S.E. ?

2.—A. In this question the point of the compasse and Moones age is giuen, as in the first, therefore I place the index of the Moone vpō the point S.S.E., and there holding it without mouing, I turne the index of the Sunne, vntill the twelfth day of the Moones age come to the index of the Moone, and then the index of the Sunne sheweth me vpon the Horizon the hower 8, therefore I say that at 8 of the clocke at night the Moone was then vpon the point South Southwest.

And thus you may at al times know the hower of the night by the Moon, vpon any point of the Compasse, so that the Moones age be also had.

How by this Instrument, you may know at all times vpon what point of the Compasse the Moone is.

1.—Q. When the Moone is 10 daies olde, vpon what pointe of the Compasse shall she be, at 9 of the clocke in the morning.

1.—A. In this question the howre of the day and the Moones age is giuen, thereby to find vpon what point of the Compasse she is at the same time. I therefore place the Index of the Sunne vpon the Compasse, at the hower 9 of the clocke in the morning, being vpon the point Southeast, then I turne the index of the Moone, vntil I bring it to the tenth day of her age, and then I see vpon the Compasse that the Moone is North and by East, and 15 min. to the Eastwards, at 9 of the clocke when she is 10 daies olde.

2.—Q. When the Moone is 20 dayes old, vpon what point of the compasse will she be at 2 of the clocke in the after-noone ?

2.—A. I place the Index of the Sun vpon the hower 2 noted in the compasse, there holding the same without mouing, then I turne the Index of the Moone, vntil I bring it vnto the 20 day of her age, and there I see vpon the compasse that she is Northeast and by North, and 15 minutes to the Northward, at 2 of the clocke in the after-noone, when she is 20 daies old.

To find the Moones age by this Instrument.

1.—Q. When the Moone is North¹ at 7 of the clocke in the forenoone, how old is shee ?

1.—A. In this question the point of the Compasse and the hower is giuen for the finding of the Moones age; therefore I set the Index of the Sunne vpon the hower 7 in the forenoone, there holding it without mouing; then I bring the Index of the Moone to the Point North and then vpon the circle containing the daies of the Moones age, I see the Moone is 8 daies and about 18 howers old, when she is North at 7 of the clock in the forenoone.

2.—Q. When the Sunne is East and the Moone South West, how olde is the Moone ?

2.—A. In this question the points of the Compasse are onely giuen for the finding of the Moones age, therefore I set the Index of the Sunne vpon the point East, there holding him steadie, thē I put the Index of the Moone vpon the point South West, and there I see that the Moone is 18 daies and 18 howers old, when the Sunne is East and she Southwest.

• After this order by the varietie of these few questions, you may frame vnto your selfe many other pleasant and necessary questions, which are very easily answered by this Instrument; and entring into the reasons of their answeres,

¹ The moon was seen by Davis on this bearing during his Arctic voyages.

you may very readily, by a little practise, be able by memory to answer all such questions with ease.

How to know the time of your tides by this Instrument.

1.—Q. When the Moone is 12 dayes olde, I desire to know the time of full sea at London ?

1.—A. To answer this question, I first looke through all the pointes of the compasse of my instrument, vntill I finde where London is written, for when the Moone commeth vpon that point of the Compasse, it will then be full sea at London ; therefore I place the index of the Moone vpon the same point, which I find to be Southwest or Northeast, there holding the Index not to be moued, then I turne the Index of the Sunne vntill I bring the twelfth of the Sunne sheweth me that at 12 of the clocke 36 minutes past, it is full sea at London the Moone being 12 daies olde.

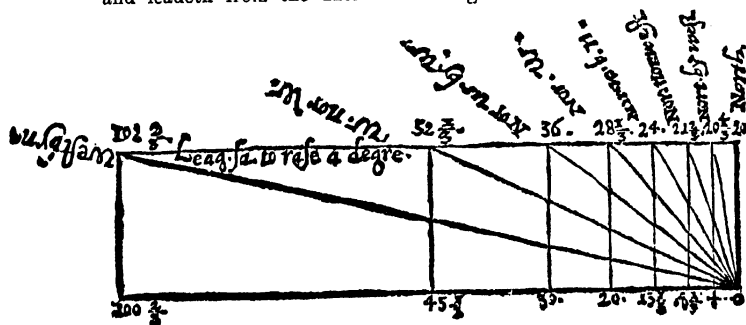
2.—Q. The Moone being 21 dayes olde, at what time is it full Sea at Dartmouth ?

2.—A. I finde vpon my instrument that Dartmouth is noted vpon the points East and West, whereby I know that when the Moone is East or West it is alwayes full sea at Dartmouth ; therefore, I place the Index of the Moone vpon the point East, and there holding it without mouing, I turne the Index of the Sunne, vntill I bring the 21 day of the Moones age vnto the Index of the Moone, and then the Index of the Sunne sheweth me vpon the Compasse, that at 10 of the clocke and 48 minutes past, it is full sea at Dartmouth, when the Moone is 21 dayes olde, and not onely at Dartmouth, but my instrument sheweth me that at the same instant it is also full Sea at Exmouth, Weymouth, Plymouth, Mountsbay, at Lynne, and at Humber ; and thus with great facilitie the time of flowings and reflowings is most precisely knowne.

And now that there may be a finall ende of the vses and

¹ This is quite correct. Time of high water is nearly simultaneous at these places.

effectes of the Cōpasse, it is conuenient that I make known vnto you, how many leagues shal be sailed vpon euery perticular poynt of the Compasse, for the raising or laying of the degrees of latitude, and in the distance sayling how farre you shall be seperated from the Meridian from whence the saide courses are begun, for as euery point of the compasse hath his certaine limited distance for the degrees of the Poles elcuation, so do they likewise lead from longitude to longitude, euery point according to his ratable limits, which distances of leagues are without alteratiō keeping one and the same proportiō, in euery perticular Horizon of any latitude, but the degrees of longitude answerable to such distances, doe differ in euery altitude, according to the nature of the parallel, as hercafter shalbe more plainly manifested. And now know, that in sayling North and South, you depart not from your meridian, and in euery 20 leagues and sayling you raise a degree: Nor. and by east raiseth a degree in sayling 20 leagues and one mile, and leadeth from the Meridian 4 leagues: Nor. northeast



raiseth a degree in sayling 21 leagues and two miles, leadeth from the Meridian 8 leagues and one mile: Northeast by north raiseth a degree in sayling 24 leagues, and leadeth from the Meridian 13 leagues and a mile: Northeast raiseth a degree in sailing 28 leagues and 1 mile, and leadeth from the Meridian 20 leagues: Northeast by east raiseth a

degree in sailing 36 leagues and 2 mile: East and by north raiseth a degree in sailing 102 leagues and a mile, and leadeth from the Meridian 100 leagues and 2 mile: East and West doe not raise or lay the Pole, but keepeth still in the same parallel; the like allowanco is to be giuen to euery quarter of the Compasse, as is laide downe vpon this Northeast quarter.

Leagues seperated from the Meridian in raising a degree.

Q. I perceiue that degrees are to great purpose in Nauigation—What is a degree?

AN. It is most true that degrees are of very great imploiment in Nauigation, and a degree is the 360 part of a circle, how big or little soeuer the circle be, being applied after 6 seuerall sortes, for the better perfections of the practises Gubernautick, so that there be degrees of longitude, degrees of latitude, degrees of azumuth, degrees of altitude, degrees applied to measure, and degrees applied to time.

A degree of longitude is the 360 part of the Equinoctiall.

A degree of latitude is the 360 part of the Meridian.

A degree of Azumuth is the 360 part of the Compasse or Horizon.

A degree of altitude is the 90 part of the verticall circle, or the 90 parte of the distance betweene the Zenith and the Horizon.

Euery degree applied to measure doth containe 60 minutes, and euery minute 60 seconds, and every second 60 thirds, &c., and euery degree of a great circle so applied, cōtaineth 20 leagues, which is 60 mile so that euery minute standeth for a mile in the accompt of measures, and a mile is limited to be 1000 paces, every pace fise foote, euery foote 10 inches,¹ and euery inch 3 barly cornes dry and

¹ These must be misprints. The nautical mile is about 6,080 feet; therefore the above paces should be 6 feet, which is impossible.

round, after our English accompt, which for the use of Nauigation is the onely test of all other ; so by these rates of measure you may prooue that a degree is 20 leagues or 60 miles ; a minute is a mile or 5000 feete ; a second is $83\frac{2}{3}$ feete ; and a third is $16\frac{2}{3}$ inches ; and thus much of degrees and their partes applied to measure.

Of degrees applied to time, there are 15 contained in euery hower, so that every degree of time standeth in the accompt of time for 4 minutes, for an hower consisting of 60 minutes of time, hath for his fifteenth part 4 minutes, so that a degree being the fifteenth part of an hower, containeth 4 minutes of time, so that 15 degrees or 60 minutes make an hower, 24 howers make a natural day, and 365 daies 6 howers are contained in a yeere, and thus much as touching time, and degrees applied to time.

What is the vse of degrees ?

The vse of degrees is to measure distances between place and place, to find altitudes, latitudes, and longitudes, to describe countries, to distinguish courses, to find the variation of the Compasse, to measure time, to find the places and motions of all celestiall bodies, as the Sunne, Moone, Planets and Starres ; to conclude, by degrees haue beene perfourmed all mathematicall obseruations whatsoeuer, whose vse is infinite.

What is the Pole's altitude, and how it may be knowne ?

Altitude is the distance, height, or mounting of one thing above another, so that the altitude of the pole is the distance, height, or mounting of the Pole frō the horizon, and is defined to be that portion of the Meridian which is contained betweene the Pole and the Horizon, which altitude or eleuatiō is to be found either by the Sunne or by the fixed Starres with the helpe of your Crosse staffe, Quadrant, or Astrolabie, but the crosse staffe is the onely best instrument for the Seamans vse.

And in the obseruation of this altitude there are 5 things especially to be regarded, the first is, that you know your meridional distance between your Zenith and the Sunne or Starres, which by your Crosse Staffe or Astrolabie is giuen; the second, that the declination be truly knowne at the time of your obseruation. And the other three are that you consider whether your Zenith be betweene the equinoctiall and the Sunne or starres, or whether the Equinoctiall be betweene your Zenith and them, or whether they be betweene your Zenith and the Equator,¹ for there is a scuerall order of working vpon each of those three differences.

Latitude you must also know, that so much as the pole is aboue the Horizon so much is the Zenith from the Equinoctial, and this distance between the Zenith and the Equator is called latitude or widenesse, and is that portion of the Meridian which is included betweene your Zenith and the Equator, for it is a generall rule for euer that so much as the Pole is aboue the Horizon, so much the Zenith is from the Equinoctiall, so that in this sence altitude and latitude is all one thing, the one hauing relation to that part of the Meridian contained betweene the Pole and the Horizon, and the other to that parte of the Meridian which is contained betweene the Zenith and the Equinoctiall.

You must further vnderstand that betweene the Zenith and Horizon it is a quarter of a great circle, contayning 90 degrees, so that, knowing howe much the sunne or any Starre is from the Horizon, if you take that distance from 90, the remainder is the distance betweene the said body and the zenith. As for example, if the Sunne be 40 deg. 37 minutes from the Horizon, I substract 40 deg. 37 min. from 90, and there remaineth 49 deg. 23 min., which is the distance betweene my Zenith and the Sunne; and those instruments that begin the account of their degrees

¹ Equator and equinoctiall of course mean the same things.

at the Zenith, concluding 90 in the Horizon, are of most ease of the finding of the latitude by the Sunne or fixed Starres, because they giue the distance betweene the Zenith and the body obserued without further trouble, and that is the number which you must haue, and for which you do search in your obseruation: al which things considered, you must in this sort proceede for the finding of the Poles height or altitude.

By the Sun or fixed Stars being betweene your Zenith and the Equinoctial the latitude is thus found, in what part of the world soever you be.

First place the Crosse staffe to your eye in such good sorte as that there may grow no errour by the disorderly vsing thereof, for unlesse the Center of your staffe and the center of your sight doe ioyno together in your obseruation it will be erroneous whatsoever you conclude thereby: your staffe so ordered, then moue the transuersary vpon your staffe to and fro as occasion requireth, vntil at one and the same instant you may see by the vpper edg of your transuersary half the body of the Sunne or Stars, and that the lower edge or end thereof do likewise touch the Horizon at that place where it seemeth that the Skie and seas are ioyned, hauing especiall regarde in this your obseruation that you hold the transuersary as directly vpriight as possibly you may; and you must begin this obseruatiō somewhat before the Sunne or Starres be at South, and continue the same so long as you perceiue that they rise, for when they are at the highest then are they vpon the Meridian, and then you haue the meridianall altitude which you seeke, at which time they will be due south from you, if your Compasse be good and without variation;¹ and then doth the transuersary shew vpon the staffe the degrees and minuts that the sayd

¹ This idea of Davis, of checking the compass at noon, might be followed with advantage in these days of iron ships.

body is from your Zenith, if ye degrees of your instrument be numbered from the Zenith toward the Horizon; or else it sheweth ye distance betweene the said body and the Horizon, if the degrees of your instrument be numbred from the Horizon, concluding 90 in the Zenith as commonly crosse staues are marked, which is not the easiest way; but if your staffe be accompted from the Horizon then subtract the degrees of your obseruation from 90, and the remainder sheweth the distance betweene your Zenith and the Sunne or Stars, which is the number you must know: vnto that number so known by your instrument adde the declination of the body, by which you do obserue whether it be the Sun or any star, and that which cometh by the addition of those 2 numbers together is the pole's height, or the latitude of the place wherein you are: as for example, in the yeere of our Lord 1593, the third day of March, the Sunne being then betweene my Zenith and the Equinoctiall, I obserued the Sunne's Meridionall altitude from the Horizon to be 72 deg. and 20 min.; but because I must knowe the distance of the Sun from my Zenith, I therefore substract 72 deg. 20 min. from 90 deg. and there remaineth 17 deg. 40 min., the distance of the Sun from my Zenith: to that distance I adde the Suns declination for that day, which by my Regiment I finde to be 3 degrees of South declination, and it amounteth vnto 20 deg. 40 min., so much is the South pole aboue the Horizon, and so much is my Zenith south from the Equinoctiall, because the Sun hauing South declination, and being betweene me and the Equinoctiall, therefore of necessitie the Antartick pole must be aboue my Horizon.

89.—60—the distance betweene the Zenith and the Horizon	17.—40—the Suns dist. frō the Zen.
72.—20—the Sunnes altitude.	3.—00—Sunnes declination.
	<hr/>
	20.—40—Poles height.

When the Equinoctiall is betweene your Zenith and the Sun or Starres the altitude is thus found in all places.

By your instrument, as before is taught, you must seeke the meridional distance of the Sun or Starres from your Zenith, which, being knowne, substract the declination of the Sun or Stars from the said distance, and the remaining number is the poles height or latitude which you seek. Example: The 20th of October, 1593, I find by my instrument that the Sun is 60 deg. 45 min. from my Zenith at noone, being then vpon the meridian, the Equator being then betweene my Zenith and the Sun, I also find by my Regiment that at that time the Sun had 13 deg. 47 min. of South declination, because the Equinoctiall is betweene me and the Sun, therefore I substract the suns declination from the obserued distance, and there resteth 46 deg. 58 min., the latitudo desired; and because the Sun hath south declination, and the Equinoctiall being betweene me and the Sun, therefore I may conclude that the pole Artick is 46 deg. 58 min. aboue my Horizon, or that my Zenith is so much toward the North from the Equator.

G.	M.	
60	45	—the Sunnes distance.
13	47	—the declination.
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46—58		—the latitude.

When your Zenith is betweene the Sunne or Stars and the Equinoctiall, the Latitude is thus found.

By your instrument, as in the first example is shewed, you must obserue ye Meridianall distance of the Sunne or Starres from your Zenith; you must also, by your Regiment or other tables, search to know the declination of that body which you obserue, then substract the obserued distance from your Zenith out of the declinatiō, and the remaining number is the latitude desired. Example: The

Sun hauing 20 deg. of North declination, and being vpon the Meridian is 5 deg. 9 min. from my Zenith, I therefore substract 5 deg. 9 min. from 20 deg., and there resteth 14 deg. 51 min. the latitude desired; and because the Sun hath North declination, my Zenith being betweene the Sun and the Equinoctiall, therefore I conclude that the North pole is 14 deg. 51 min. aboue my Horizon.

G. M.

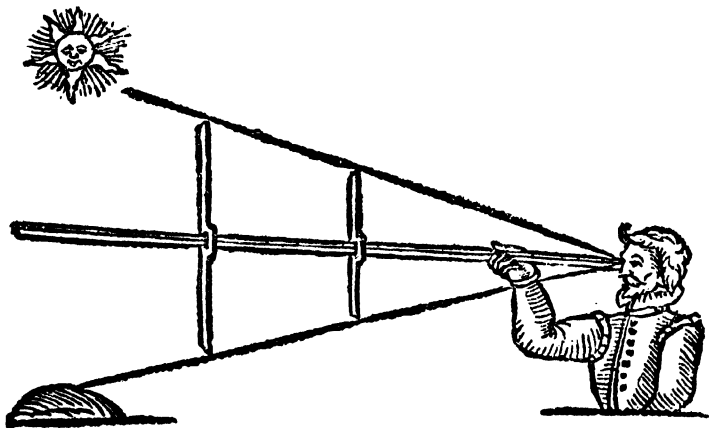
19—60—the declination,

5—9—the Suns distance from my Zenith.

14—51—the Poles height.

How shall I know the true order of placing the Crosse Staffe to mine eye, to auoyde error in my obseruation?

‘ To finde the true placing of the staffe at your eye, thereby to amend the parallar of false shadow of your sight, do thus: take a staffe hauing two crosses, a long crosse, which endeth in 30 degrees, and a short crosse which beginneth at 30 deg. where the long crosse endeth, put the long crosse vpon his 30 deg., and there make him fast; then put the short crosse likewise vpon his 30 deg., there fasten him without mouing; then set the ende of your staffe to



your eye, mouing it from place to place about your eye, vntill at one instant you may see the ends of both crosses, which when you finde, remember that place and the standing of your body, for so must your staffe be placed, and your body ordered in all your obseruations.

Are these all the rules that appertaine to the finding of the Poles height?

Those that trauell farre towards the north vnder whose Horizon the Sunne setteth not, shall some time haue occasion to seeke the latitude by the Sunne when the Sunne is north from them, the pole being then between the Sunne and their Zenith. When such obseruations are made, you must by your instrument seeke the Suns height from the Horizon, substract that height from his declination, and the remaining number sheweth how far the Equinoctiall is vnder the Horizon vpon the point north, for so much is the opposite part of the Equator aboue the Horizon vpon the point South, subtract that Meridionall latitude of the Equinnoctiall from 90, and the remaining number is the poles height desired. Example: The Suune hauing 22 degrees of North declination, his altitude from the horizon is obserued to be 3 degrees 15 minutes, therefore subtracting 3 deg. 15 min. from 22 degrees, there resteth 18 deg. 45 min., which is the distance of the Equinoctiall from the horizon, which boying taken from 90, there resteth 71 deg. 15 min. the poles eleuation desired.

G. M.

21—60—the Suns declinations,

3—15—the Sunnes altitude,

18—45—the altitude of the equinoctiall.

G. M.

89—60—ye dist. between Zen. & Hor.

18—45—altitude of the Equator.

—————

71—15—the altitude of the pole.

But you must know that the declination found in your Regiment is not the declination which in this case you

must vse; for the regiment sheweth ye Suns declination vpon the Meridian or South point, in the place for whose Meridian the same was calculated, and not otherwise: therefore it is necessary to know the Suns declination at all times, and vpon euery point of the Compasse; for I haue beene constrayned in my northwest uoiages, beying within the frozen zone, to search the latitude by the Sun, at such times as I could see the sun, vpon what point of the Compasse soeuer, by reason of the great fogges and mistes that those Northern partes are subiect vnto; and there is consideration also to be had vpon euery difference of longitude for yo Sunnes declination, as I haue by my experience found at my being in the Straights of Magilane, where I hauo found the suns declination to differ fro' my regiment calculated for London, by so much as the Sunne declineth in 5 howers, for so much is the difference betweene the Meridian of London and the Meridian of Cape froward, being in the midst of the said straights.

How may this declination be found for all times, and vpon all points of the Compasse?

First consider whether the Sun be comming towards the Equinoctiall, or going frō him; that being known, consider the time wherein you seeke the declination, then looke for the Sunnes declination in your regiment for that day, and also seeke his declination for the next day, substract the lesser out of the greater, and the remainder is the whole declination which the Sunne declineth in 24 howers, or in his mouing through al the points of the Compas, from which number you may by the rule of proportion find his declination vpon every point of the cōpas, or for euery houre of the day, as by these examples may appeare. Example: In the yeere 1593 the 20 of March, I desiro to know the Suns declination when he is vpon the North part of the Meridian of London, I seeke the Suns de-

clination for that day, and find it to be 3 deg. 41 mi[n]. the Sunne then going from the Equator, I also search his declination for the next day, being the 21 of March, and find it to be 4 deg. 3 min. I then substract 3 deg. 41 min. from 4 de[g]. 3 min. and there resteth 22 min., so much the Sun doth decline in 24 howers, or in going through all the points of the Compasse. Then, I say, by the rule of proportion, if 24 howers giue 22 min. of declination what will 12 howers giue, &c. I multiplie and deuide, and find it to be 11 min. the Sunnes declinatiō in 12 howers motion, to be added to the declination of the 20 day, being the Sūnes going from the Equator, or for the points of the Compasse, I may say, if 32 points giue 22 min. of declination what will 16 points giue, which is the distance betweene South and North. I multiply and deuide as the rule of proportion requireth, and find the 16 points giue 11 min. the Suns declination, in mouing through 16 points of the Compasse, which is to be added to the declination of the 20 day, because the Sun goeth from the Equator, for I conclude the declination to be 3 deg. 52 min., the Sun being North the 20 of March.

HO.	M.	HO.	M.	HO.	M.	HO.	M.
24	22	12	11	32	22	16	11
	12				16		
<hr/>		<hr/>		<hr/>		<hr/>	
	44		2		132		352(11
	22		264(11		22		322
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	264		2		352		

Being West from the Meridian of London 90 degrees of longitude, I desire to know the Suns declination when the Sun is vpon the Meridian the 20 of March, 1593. I must here consider that 90 deg. of longitude make 60 howers of time, for euery hower containeth 15 deg., whereby I know that when the Sunne is south at London he is but East from

me, for when it is 12 of the clocke at London it is but 6 of the clocke in the morning with mee, and when it is 12 of the clocke with me it is then 6 of the clocke in the afternoone at London ; therefore I must seek for the declination of the sunne at 6 of the clocke in the afternoone, and that is the meridianall declination which I must use, being 90 deg. West from London, which to doe, the last example doth sufficiently teach you, whereby you may easily gather the perfect notice of whatsoever is requisite in any of these kinde of observations, if you reade with the eye of reason, and labour to vnderstand with iudgement that which you reade.

There is another way most excellent for the finding of the Sunnes declination at all times, that is to search by the Ephemerides the Sunne's true place in the Ecliptick for any time purposed whatsoever, and then by the tables of Sinus the declination is thus known. Multiply the Sinus of the suns longitude from the Equinoctial points of Aries or Libra, to which soeuer he is nearest, by the Sinus of the Suns greatest declination, and diuide the product by the whole Sinus, and the arke of the quotient is the declination desired : but because seamen are not acquainted with such calculations, I therefore omit to speake further thereof, sith this plaine way before taught is sufficient for their purpose.

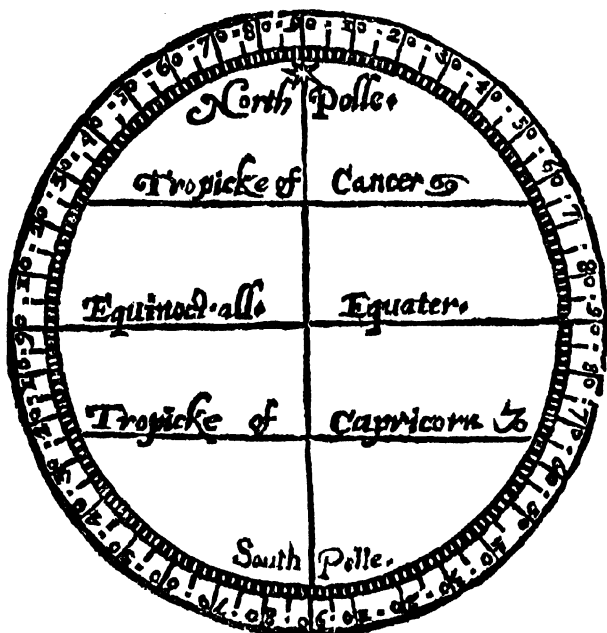
The vse of this Instrument.

By this instrument¹ you may sufficiently vnderstand the reasons of what socuer is before spoken for the finding of the Poles eleuation, or the latitude of your being, into the consideration whereof, because the yoong practiser may the better enter, I thinke it not amisse by a few examples to expresse the necessary vse thereof.

¹ See next page.

1.—Q. The Sunne hauing 7 degrees of north declination, and the Pole Artick being 45 degrees about the Horizon, I demaund what will bee the Sunnes meridianall distance from my Zenith?

1.—A. First, I turne the Horizon vntil I bring the north pole to be 45 degrees about the same, there holding the Horizon not to be moued, I then bring the thrid that is fastened to the Center of the Instrument, 7 degrees from the Equinoctiall towards the north, because the Sunne hath so much north declination, and the thrid doth show me vpon the verticall circle, that the Sunne is 38 degrees from my Zenith.



2.—Q. The pole artick being 50 deg. about the Horizon, and the Suns distance 30 deg. from the Zenith, I demaund what is the Suns declination?

2.—A. As in the first question I place the North pole 50

degrees above the Horizon, there holding the Horizon not to be mooved, then I bring the thrid to the 30 degree vpon the verticall circle, because the Sunne is 30 degrees from my Zenith, and then the thrid sheweth vpon the Meridian betweene the Tropick of Cancer and the Equinoctiall, that the Sunne hath 20 degrees of North declination.

3.—Q. The Sunne hauing 10 deg. of South declination, being vpon the Meridian, is 53 deg. from my Zenith, I demaund what is the poles height?

3.—A. In the first question, the Poles height and the Sunnes declination are giuen for the finding of the Sunnes meridianall distance from the Zenith. In the second, the Poles height is giuen, and the Sunnes meridianall distance from the Zenith, thereby to find the Sunnes declination. And in this question the Sunnes declination and meridianall distance is giuen for the finding of the Poles height. I therefore bring the thrid, fastned in the center of the instrument, 10 degrees South from the Equator, between the Equinoctiall and the tropick of Capricorne, there holding the thrid not to be mooved, I then turne the Horizon vntil I bring the 53 degree of the verticall circle vnder the thrid, and then the Horizon sheweth me that the North pole is 43 degrees above the same.

4.—Q. The Sun hauing 12 degrees of south declination, and being vpon the Meridian South from me, is 30 degrees above the Horizon, I demaund how farre the Sun is from my Zenith, how much the Equinoctiall is above the Horizon, and what is the Poles height.

4.—A. First, I bring the thrid to the place of the Sunnes declination as before, there holding it not to be moued, thē I turne the Horizon vntil I bring it to be 30 deg. under the thrid, and then the thrid sheweth me that the Sun is 60 deg. from my Zenith, and the Horizon sheweth that the Equinoctiall is 42 deg. above the same, and that the north pole is also elevated 48 deg. above the horizon. Although these

questiōs are so very easy and plain, as that they may readily be answered by memory, yet because the reasons how they are answered may the better appeare, is the cause wherefore they are demaunded, and in this sort answered, only for the benefit of such as are not altogether expert in these practises, that thereby they might likewise frame vnto themselves questions of other variety, and so gather thereby the more sufficient iudgment in this part of Nauigation.

What is the Zenith ?

The zenith is that prick or point in ye heauē which is directly over your head, from whence a line falling perpendicularly, wil touch the place of your being, and so passe by the center of the sphere, and this line may be called the Axis of the Horizon, and the Zenith the pole of the same, being 90 deg.

The use of the Regiment.

Forasmuch as the poles height cannot be obsrured by the Sunne, unlesse the Sunnes true declination be knowne, I haue therefore carefully calculated these Tables or Regiment,¹ out of Stadius Ephimerides² for the years 1593, 94, 95, and 1596, which will serue untill the yeere 1612 without further correction ; and because there may grow no errour by mistaking the yeeres, I haue ouer euery moneth written the yeere of the Lord, in which the declination of the same moneth is to be vsed, therefore when in any yeere and moneth you seeke the Sunnes declination, first looke for

¹ It has not been thought necessary to reprint the tables of declination.

² Johannes Stadius was professor of mathematics, first at Paris and afterwards at Louvaine. His first Ephemerides, which he called *Fabulæ Bergenses* in honor of Robertus á Berges, Bishop of Liege, was published in 1545. Others followed from 1554 to 1606. The Ephemerides or daily almanack of Johannes Stadius was in general use in this country. It is described by Blundeville in his *Art of Navigation* (1613), p. 662.

the moneth, and there you shall find 4 of those moneths, which are the moneths betweene the leape yeeres, then looke ouer each of those moneths, vntill you find the yeere of the Lord wherein you seeke the declination, and directly vnder that yere is the moneth wherein you must seeke the Suns declination. Example: 1595, the tenth day of February, I would know the Suns declination; first I seeke out February, and ouer the third moneth I see the yeere 1595; therefore that is my moneth, against the tenth day of which moneth I find that the sunne hath 11 degrees 10 minutes of South declination, and after the like maner, you must do in all the rest as occasion requireth.

What is the Chart?

The Sea Chart is a speціаль instrument for the Seamans vse, whereby the hydrographically description of the Ocean Seas, with the answerable geographical limits of the earth, are supposed to be in such sort giuen as that the longitudes and latitudes of all places, with the true distance and course betweene place and place, might thereby be truly knowne. But because there is no proportionable agreement between a Globus superficies and a plaine superficies, there a Chart doth not expresse that certainty of the premisses which is thereby pretended to be giuen, for things are best described vpon bodies agreeable to their owne forme. And whereas in the true nature of the Sphere there can bee no parallels described, but the East and West courses onely, the rest of the courses being concurued lines, ascendent toward the Poles, the Meridians al concurring and ioyning together in the Poles, notwithstanding in the Sea Chart all those courses are described as parallels, without any diuersity, alteration, or distinction to the contrarie, whereby the instrument is apparantly faultie; yet it cannot bee denied but Charts for short courses are to uery good purpose for the Pilots vse, and in long courses

be the distance neuer so farre, if the Pilot returne by the same course¹ whereby in the first he prosecuted his voyage, his Chart wil be without errour, as an instrument of very great commoditie; but if he returne by any other way then by that which he went forth, the imperfections of the Chart will then appeare to be very great, especially if the voyage be long, or that the same be in the North partes of the worlde, the farther towards the North, the more imperfect; therefore there is no instrument answerable to the Globe or paradoxall Chart, for all courses and climats whatsoever, by whom all desired truth is most plentifully manifested, as shall hereafter at large be declared, but for the coasting of any shore or country, or for shorte voyage, there is no instrument more conuenient for the Seamans vse, then the well-described Sea Chart.

What is the vse of the Sea Chart?

By the directions of the sea chart, the skilfull pilot conuaieth his ship from place to place, by such courses as by the Chart are made knowne vnto him, together with the helpe of his compasse or Crosse-staffe as before is shewed, for the Crosse-staffe, the Compas, and the Chart, are so necessarily ioyned together, as that the one may not wel be without the other in ye execution of the practises of Nauigation; for as the Chart sheweth the courses, so doth the Compasse direct the same, and the Crosse-staffe by euery particular obserued latitude doth confirme the truth of such courses, and also giueth the certayne distance that the ship hath sayled vpon the same.

And in the vse of or vnderstanding of the Sea Chart there are fve thinges cheifly to be regarded.

The first is, that the Countries or geographie of the

¹ Davis must mean by the same track. The plane chart then in use was much more distorted than Mercator's projection.

Chart bee knowne, with euery Cape, Promontory, Port, Hauen, Bay, Sands, Rocks, and dangers therein containd.

Secondly, that the lines drawne vpon the Chart, with their seuerall properties, be likewise vnderstood.

Thirdly, that the latitudes of such places as are within the Chart be also knowne, as by the Chart they are expressed.

Fourthly, that you bee able to measure the distances betweene place and place vpon the Chart.

And fiftly, the Seaman must be able by his Chart to know the true courses betweene any Iles, Continents, or Capes whatsocuer, for by these fiue diuersities, the Chart is to be vsed in the skill of Nauigation.

How is the latitude of places knowne by the Chart?

The latitude is thus found by the Chart: vpon the place whose latitude you desire to know, set one foote of your compasses, then stretch the other foote to the next East and West line, mooue your hand and Compasses East or West as occasion requireth, vntill you bring the Compasses to the graduated Meridian, and there that foote of the Compasses which stooode upon the place whose latitude you would know, doth shewe the latitude of the same place.

How is the course betweene place and place knowne?

When there are two places assigned, the course betweene which you desire to know, set one foote of your Compasses vpon one of the places, then by discretion consider the lines¹ that lead toward the other place, stretching the other foote of the Compasses to one of those lines, and to that part of the line which is neerest to you, keeping that foote still upon the same line, moue your hand and Compasses toward the other place, and see whether the other foote of

¹ That is to say the rhumb lines with which old charts were covered. These lines were necessary before parallel rulers came into use.

the Compasses that stood upon the first place, do by this direction touch the second place, which if it doe, then that line wherevpon you kept the one foote of your Compasses, is the course betweene those places; but if it touch not the place, you must by discretion search vntil you finde a line, wherevpon keeping the one foote of the Compasses, will lead the other foote directly from one place to the other, for that is the course betweene those two places.

How is the distance of places found vpon the Chart.

If the places be not farre asunder, stretch a paire of Compasses betweene them, setting the one foote of the compasses upon one of the places, and the other vpon the other place, then not altering the compasses, set them vpō the graduated meridian of your Chart, and allowing 20 leagues for every degree that is contained betweene the 2 feet of your compasses, the distance desired is thereby knowne; if between the places there be 5 degrees, then they are 100 leagues asunder, &c. But if the distance betweene the places be so great as that the compasses cannot reach betweene them, then take out 5 degrees with your compasses, which is 100 leagues, and therewith you may measure the distance as practise will teach you. There is also in euery Chart a scale of leagues laid downe, whereby you may measure distances, as commonly is vsed.

How doth the Pilot order these matters, thereby to conduct his ship from place to place?

The Pilote, in the execution of this part of Nauigation, doth with carefull regarde consider three especiall things, whereupon the full practises are grounded.

1. Of which the first is, the good obseruations of his latitude, which howe it may be knowne is before sufficiently expressed.

2. The second is a carefull regarde vnto his stereag, with very diligent examination of the truth of his Compasse, that it be without variation or other impediments.¹

3. And the third is a careful consideration of the number of leagues that the Ship sayleth in eury houre or watch,² to the neerest estimation that possibly he can giue, for any two of these three practises being truely given, the third is thereby likewise knowne.

As by the Corse and height the distance is manifested, by the distance and Corse the height is knowne; by the height and distance the Corse is giuen, of which 3 things the Pilot hath onely his height in certaintie; the corse is somewhat doubtful, and the distance is but barely supposed, notwithstanding from his altitude³ and Corse hee concludeth the truth of his practise proceeding in this sort.

First he considereth in what latitudo the place standeth from whence hee shapeth his corse, which for an example shal be the Lyzart, standing in 50 degrees of septentrionall latitude, then directing his corse S. W., saileth 3 or 4 daies or longer in such thick weather, as that he is not able to make any obseruation of the Poles altitude, in which time he omitteth not to keepe an accompt how many leags the ship hath sailed vpon that corse as neere as he can gesse, which number of leagues in this example shalbe 100 according to his iudgement; then having conuenient weather, he observeth in what latitude hee is, and findeth himselfe to be in 47 degrees; now with his compasses hee taketh the distance of 100 leagues, which is the quantitie of the ships run by his supposition, and then setting one foote of the Com-

¹ This rule might also be advantageously followed in these days of iron ships. Deviation is to us what variation was to Elizabethan navigators, *i e.*, a varying quantity.

² Davis does not tell us how he calculated his distances. But in the *Regiment of the Sea*, by William Bourne (1596), p. 48, there is a description of the log and line, and the method of using them.

³ He means difference of latitude.

passes upon the Lizart, which is the place from whence he began his corso, and directly S.W. from the same he setteth the other point of the compasses by the direction of another paire of compasses, in such sort as courses are found, and there he maketh a pricke for the place of his ships being, according to his reckoning and corso.

And now, searching whether it do agree with his height (for the height, corso, and distance must al agree together), he findeth that his prick standeth in 46 degrees 29 minutes, but it should stand in 47 degrees to agree with his observation. Therefore, perceiuing that he hath giuen the ship too much way, he bringeth his corso and obserued altitude to agree, and then hee seeth that his ship hath sayled about 85 leagues, and there he layeth down a pricke for the true place of his ships being, according to his corso and latitude, for so by his corso and height he findeth the truth of his distance, and reprooueth his supposed accompt to be 15 leagues too much : and after this sort he proceedeth from place to place, vntill he arrive vnto his desired port, which is a conclusion infallible if there be no other impediments (whereof there hath not been good consideration had) which may breede errour, for from such negligence there may arise many inconueniences.

What may those impediments be ?

By experience at the Sea we find many impediments that so disturb the expected conclusion of our practises as that they agree not with the true positions of arte, for, first, it is a matter not common to haue the winde so beneficial as that a ship may saile thereby betweene any two assigned places vpon the direct corso, but that by the contrarietie of windes she may be constrained to trauers vppon all points of the Compasse (the nature whereof I have before sufficiently expressed.)

Secondly, although the winde may in some sort fauor,

yet the ship may haue such a leward condition as that she may make her way 2 or 3 points from her caping.¹

Thirdly, the stredge² may be so disorderly handled as that thereby the Pylote may be abused.

And, lastly, the cōpasse may be so varied as that the Pilote may likewise thereby be drawne into errour; at all which things and many moe, as the nature of his sailing, whether before the wind, quartering, or by a bowling, or whether with lofty or low sailes, with the benefits or hinderāces of the sea, tidegates, streames, and forced set thereof, etc., of all which things (I say) the skilfull Pylote must haue consideration, which are better learned by practice then taught by penne, for it is not possible that any man can be a good and sufficient pilot or skilful Seaman but by painful and diligent practise with the assistance of arte, whereby the famous pilot may be esteemed worthy of his profession, as a member meete for the common weale.³

And now hauing sufficiently shewed you the ordering of your Chart for the execution of the skill of Nauigation, and boyng also desirous that you should effectually vnderstand the full nature and vse of the same, I think it good by a few questions to giue you an occasion to exercise yourselve in the perfect accomplishment of such conclusions as are by this excellēt and commodious instrument to be performed.

¹ Probably shaping, or course indicated by the compass.

² Steerage. Perhaps stredge stands for stretch, a term for a ship's course when beating. "To stretch across on the other tack" is a common expression.

³ An admirable passage. Captain Bedford, R.N., in his *Sailor's Pocket Book* (3rd ed.), also dwells upon the necessity for practical experience in making a good pilot. "The mastery of the ocean", he urges, "cannot be learnt upon the shore, and can only be acquired by incessant practice on shipboard and at sea."

Necessary questions for the better vnderstanding of the commodious vse of the Chart.

1.—Q. If I sayle 70 leagues vpon the South-west course, I demaund how many degrees I shall lay or depresse the pole?

A. The difference wil be 2 degrees 30 minutes.

2.—Q. If in sayling West-nor-west I rayse the pole 3 degrees 30 minutes, I demaund how many leagues I haue sayled?

A. The distance sayled is 180 leagues.

3.—Q. If in sailing 108 leagues betweene West and Nor I raise the pole 3 degrees, I demaund vpon what corse I haue sailed, and how farre I am from the Meridian from whence I began that corse?

A. The corse sailed is N.W. b. W., and the distance from the Meridian is 90 leagues.

4.—Q. If in sailing 154 leagues I be 80 leagues West from the Meridian from whence I began my corse, I demaund vpon what point of the Compasse I haue sailed, and how much I haue raysted the pole?

A. The corse is N.W. b. N., and the pole is raysted 6 degrees.

5.—Q. If I saile N.W. vntill I be 50 leagues from the Meridian where I began my corse, I demaund how many leagues I haue sayled, and how much the pole is raysted?

A. The distanco sayled is 71 leagues, and the pole is raysted 2 degrees 32 minutes.

6.—Q. If in sayling W.N.W. I doe in 30 howers raise 2 degrees, how many degrees should I haue raysted the Pole if the same motion had been North and by West?

A. You should haue raised 5 degrees.

7.—Q. A ship sailing towards the West, for every 80 leagues that she sayleth in her Corse she departeth from the Meridian from whence she began the same Corse 45

leagues, I demaund vpon what point of the Compasse, and how many leagues she hath sayled in raising the pole 5 degrees?

A. She hath sayled North-west by North 120 leagues.

8.—Q. A pylote sailing toward the west 100 leagues hath forgotten his Corse, yet thus much he knoweth, that if he had sailed vpon such a Corse as that in 160 leagues saying he would haue raysed the pole 3 degrees, hee should then haue beene twice as farre from the Meridian as now hee is, and should also haue beene $\frac{1}{2}$ degree further to the Northward then now he is. I would now know what corse he hath sailed, how many leagues, and how farre he is separated from the Meridian from whence he began the sayde Corse?

A. Shee hath sailed 88 leagues North-west by west, and is 73 leagues from the Meridian neerest.

9.—Q. Two ships departing from one place, the one saying 145 leagues towards the west hath raised the pole 4 degrees, and the other hath raysed the pole 7 degrees, and is 95 leagues West from the Meridian of the place from whence he began his corse, I demaund by what corse the said ship hath sailed, how farre they be asunder, and by what corse they may meete?

A. The first ship hath sailed North-west by west, the second hath sayled North-west by north 170 leagues: they are asunder 65 leagues, and the corse betweene them is North-north-east and South-south-west.

10.—Q. Two ships saying from one place, the one in sailing 180 leagues is to the eastward of the Meridian where he began his corse 150 leagues, I demaund vpon what corse and how many leagues the other ship shall saile to bring himself 50 leagues N. b. W. from the first ship?

A. The first ship hath sailed N. e. b. c., and hath raysed the Pole 5 degrees; the second ship must sayle north-east by north 237 leagues.

Although it may seeme to some that are very expert in Navigation that these questions are needlesse, and without vse, beyng so plaine as not deserving in this sort to bee published, notwithstanding that theyr opinion I do in friendly curtesie advise all young practisers of this excellent arte of sayling, that they doe not onely by their Charts proove the truth of these answered questions, but also indevor themselves to propound divers other sorts of questions, and in seeking their answeres, to enter into the reason thereof: for by such exercise the yong begiuner shall vnderstand the substantial grounds of his Chart, and grow perfect therein, for whose ease and furtherance onely I have at this present published this briefe treatise of Nauigation, knowing that the experte Pylote is not vnfurnished of these principles, but euery little helpe dooth greatly further in euery beginning: and, therefore, for the further benefite of the practiser, I haue hereunto annexed a particular Sea Chart of our Channell, commonly called the the Sleue,¹ by which all that is before spoken as touching vse of the Chart, may be practised, wherein the depths of the Chanell are truly layde downe: being an instrument most commodious and necessary for all such as seeke the Chanell comming out of the ocean Sea. Much of it is from my owne practise, the rest from pylotes of very good sufficiency. I haue founde great certaintie by the vse of this Chart, for by the altitude and depth² I haue not at no time missed the true notice of my Shippes being which (through God's mercifull favour) by my landfalls I haue found alwayes to be without errour, therefore haue it not in light regard, for it will giue you great euidence, and is worthy to

¹ La Manche. The channel is also called the "Sleeve" in Bourne's *Regiment of the Sea*, the twenty-second chapter of which gives details of the soundings.

² That is, latitude and sounding.

be kept as a speciall iewel for the Seaman's vse, be he neuer so expert.¹

And thus hauing sufficiently expressed all the practises appertayning to the skill of Horizontal Navigation, which kinde of sayling is now of the greatest sort only practised, I thinke it good for your better memory briefly to reporte that which before is spoken as touching this kinde of Navigation, and with all it will not be amisse to show you after what sorte I haue beene accustomed to keepe my adcomptes in my practises of sayling, which you shall finde to be very sure, plaine, and easie, whereby you may at all times examine what is past, and so reforme the courses layde down vpon the chart, if by chaunce there should any error be committed. And so concluding this parte of Navigation, will in the next treatise make known vnto you the vse of the Globe, such vses I meane as the Seaman may practise in his voyages, and that are most necessary for his knowledgo.

A Table shewing the order how the Seaman may keepe his accounts, whereby he may at all times distinctly examine his former practises ; for in euery 24 howres, which is from noone to noone, he doth not onely lay downe his latitude with the corse and leagues, but also how the winde hath blowne in the same time.

The first Columbe is the moneths and the daies of the same, the second is the obserued altitude, the third is the Horizontal corse or motion of the Ship, the fourth the number of leagues that the Ship hath sayled, the fifth is a space wherein must be noted by what wind those things haue beene performed : and the next great space is to lay downe any breefe discourso for your memory.²

¹ This chart of the British Channel by Davis, is not in the editions of the *Seaman's Secrets* at the British Museum, or in the Pepy's Library at Cambridge.

² In his traverse book, kept during his third Arctic voyage, Davis has another column for hours of the day. See page 49.

ANNO 1593.¹

Monthes and daies of the month.	Latitude. a. m.		Corse.	Leages.	Winde.	The 23 of March, Cape S. Augustine in Brasill being 16 leags east from me, I began this accept.
March 24	7	30	N.N.E.	25	East	Compassee varied 9 deg. the South point Westward. Compassee varied 8 deg. the South point Westward. Compassee varied 6 deg. 40 m. the South point westward. Observation, the Pole about the Horizon.
25	5	44	N. by E. norly	36	E. b. N.	
26	4	1	N. by N.	35	E. b. N.	
27	2	49	N.	24	E. b. N.	
28	1	31	N. easterly.	26	E. b. N.	
29	1	4	N.N.W.	9	N.E.	
31	0	0	N. b. W.	21	E.N.E.	
April 4	0	39	N.W. b. N.	15	N.E.	
7	1	53	N.N.W.	28	N.E.	
9	3	5	N.W. b. N.	30	N.e.b.e.	
10	4	5	N.W. b. N.	22	N.E.	Compassee varied 7 deg. the north point eastward.
11	4	45	N.W.	18	N.e. b. N.	
12	5	16	N.W.	14	N.e. b. N.	
13	6	11	N.w. b. N.	23	N.e.	
14	7	16	N.w. b. N.	24	N.e.	

A briefe repetition of that which is before spoken.

There are 3 kinds of Nauigation, Horizontall, Paradoxall, and sailing upon a great Circle, performed by corse and trauers.

A Corse is the Paradoxall line, which is described by the Ship's motion upon any point of Compassee.

A Travers is the varietie of the Ship's motion vpon euery alteration of Corsos.

The Compassee is an artificial Horizon, by which Corses and Traverses are directed, and containeth 12 points, and euery point containeth $11\frac{1}{4}$ degrees, or 45 minutes, being $\frac{3}{4}$ of an hower.

¹ This is an extract from the log of the *Desire* during her disastrous voyage home. See pages 125 and 126.

By such quantitie of time as the Moone separateth herselfe from the Sunne, by the like rate of time euery tide doth one differ from another. In euery hower the tide altereth two minutes, in euery floud twelue minutes, and in euery ebbe twelue minutes, and in euery day 48 minutes, because that so is the Moone's separation from the Sunne : for the Moone doth separate herselfe from the Sunne in euery day one point and 3 minutes ; between the change and the full shee is to the Eastwards of the Sun, and then is her separation, at which time she is before the Sunne in respect of her naturall motion, but in regarde of her violent motion she is then behinde or abaft the Sunne.

Betweene the full and the change she is to the Westward of the Sunne, applying towards the Sun, and then is her application, at which time shee is behind or abaft the Sunne, in respect of her natural motion, but in considerations of her violent motion, she is then before the Sunne.

She hath a violent motion, a naturall motion, a slowe, swift and meane motion.

In euery 27 dayes and 8 howers she performeth her naturall motion through the Zodiac.

Betweene change and change there is twenty-nine daies, twelue houres fortie minutes neerest.

The solar year consisteth of 12 months, and the lunar yee[r]e of 12 Moones.

The Moone's age is found by the Epact.

All instruments vsed in the Nauigation, of what shape or forme soeuer they be, are described or demonstrated vpon a Circle or some portion of a Circle, and therefore are of the nature of a Circle.

A degree is the 360 parte of a Circle, how bigge or little soeuer the Circle be.

A degree is applied after the 6 scuerall sortes, to the Equator, to the Meridian, to the Horizon, to the verticall Circle, to measure, to time.

Altitude is the distance, height, or mounting of one thing about another.

The Pole's altitude is the distance between the Pole and the Horizon, or that portion of the Meridian which is contained between the Pole and the Horizon.

The altitude of the Sunne about the Horizon, is that portion of the verticall circle which is contained between the Horizon and the Sunne.

Latitude is that arke of the Meridian which is contained between the parallell of any place and the Equator, or that part of the Meridian which is included between the Zenith and the Equinoctiall.

Longitude is that portion of the Equator contained between the Meridian of S. Michels, one of the Assores, and the Meridian of the place whose longitude is desired: the reason why the account of longitude doth begin at this Ile, is, because that there the Compasse hath no variety,¹ for the Meridian of this Ile passeth by the Poles of the world and the poles of the Magnet, being a Meridian proper to both Poles.²

The longitude between place and place, is the portion of the Equator which is contained between the Meridians of the same places.

Declination is the distance of the Sunne, Moone, and Starres from the Equinoctiall, or that part of the Meridian which passeth by the Center of any celestiall body, and is contained between the same center and the Equinoctiall.

¹ In the year 1594. The variation at St. Michael's is now about 25° W.

² From the time of Ptolemy the meridian of the Fortunate Isles, as being furthest to the west, was adopted as the first, and the meridian of Ferro the westernmost of the Canaries, was universally used until the time of Elizabeth. Cosmographers then adopted St. Michael's, in the Azores, on the ground that the compass there had no variation. After the establishment of the observatory in 1676, the Greenwich meridian was adopted by the English.

Hidrography is the description of the Ocean Sea, with all Iles, bancks, rocks and sands therein contained, whose limits extend to the geographicall borders of the earth, the perfect notice whereof is the chieftest thing required in a sufficient pylote, in his excellent practice of sayling.

Geography is the description of the heauens, with all that is containd within the circuite thereof, but to the purpose of nauigation, we must vnderstand Cosmography to be the vniuersall description of the terrestriall Globe, distinguished by all such circles, by which the distinction of the celestiall Sphere is vnderstood to be giuen, with euery Country, Coast, Sea, Harborow, or other place, seated in their one longitude, latitude, Zone and Clyme.

The Chart is a speciall instrument in Nauigation, pretending the Cosmographicall description of the terrestriall Globe, by all such lines, circles, corses and diuisions as are required to the most exquisite skil of nauigation.

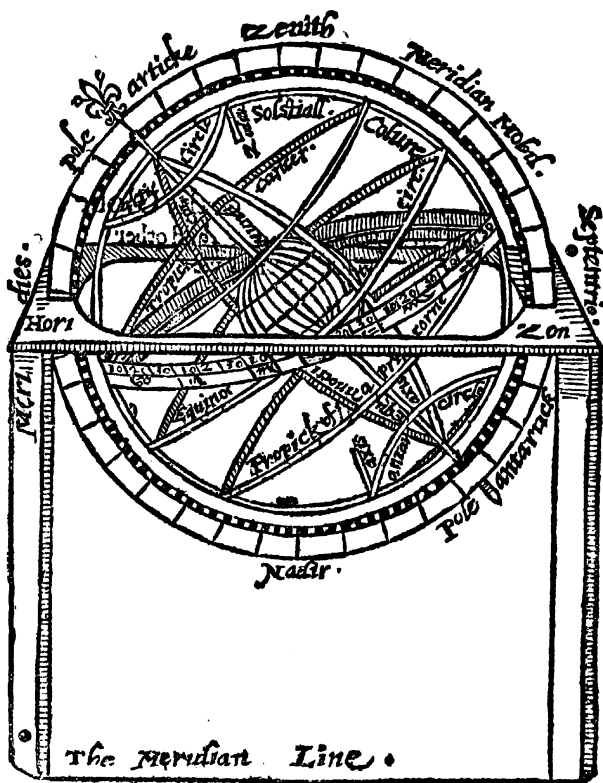


THE
SECOND PARTE OF
THIS TREATISE OF
NAVIGATION.

WHEREIN IS TAUGHT THE NA
ture and most necessary vse of the Globe,
With the Circles, Zones, Climates, and other
distinctions to the perfect vse
of Sayling.

By which most excellent Instrūment is performed
all that is needfully required to the
full perfection of all the three kindes
of Naulgation.





SECOND BOOKE OF THE SEAMANS SECRETS.

What is the Sphere?

THE Sphere is the solide body contained vnder one superficies, in the midst whereof there is a point or prick, which is the center of the Sphere from whence all right lines drawn to the circumference are equal the one to the other, whereby it is to be vnderstood that the centre of the Sphere is euenly placed in his midst, as that it hath like distance from al parts of the Circumference. And forasmuch as the Sphere is an instrument demonstrating vnto vs the vniversall ingine of the world, we must therefore vnderstand this center to be this terrestrial Globe wherein we haue our being, which compared to the celestiall Globe or heauēly circumference doth beare proportiō, as ye center to his circles, which earthly globe by the diuine mightie workmanship of God doth admirably hang vpon his center, being of equal distance from al parts of the circumference.

What are the distinctions of the Sphere?

The Sphere is distinguished by tenne circles, whereof sixe are great circles, and 4 are lesser circles: whereof there are only 8 described vpon the body of the Globe, limiting the zones and motion of ye planets, as the Equinocciall, the Ecliptick, Equinoctiall Colure, the Solsticiall Colure, the Tropicke of Cancer, the Tropicke of Capricorne, the Artick Polar Circle, and the Antartick Polar Circle. The Horizon and Meridian are not described vpon the body of the Globe,

but artificially annexed therevnto for the better perfection of his vse.

Which are the Great Circles and which the lesser?

The Equator, the Ecliptick, the 2 Colures, the Meridian and the Horizon are great circles, because they diuide the sphere into 2 equal parts.

The 2 Tropickes, the Polar circles, are lesser circles, because they diuide ye sphere into 2 vnequall partes.

What is the Equator or Equinoctiall?

The Equinoctial is a great circle deuiding ye Sphere into 2 equal parts, leauing the one halfe towards the North, and the other halfe towards the South, and is equally distant from both the Poles of the worlde 90 degrees, placed euently betweene them, and described vpon them, this line crosseth the Horizon in the true points of East and West, and hath alwaies his own half about the Horizon, vnless it be vnder either of the Poles, for there the Equator is in the Horizon: it crosseth the Meridian at right Sphorick Angles, and it also crosseth the Ecliptick line in the first minute of Aries and Libra, deuiding the Ecliptick and Horizon, and is also by them deuided into two equall partes. This line is also deuided into 360 equall partes or degrees, which are the degrees of Longitude,¹ beginning the account in the point of Aries, reckoning towards the East, concluding the number 360 in the place where the first account began: viz. where the Equator doth intersecte the Ecliptick in the first minute of Aries, vnder which Meridian S. Michels² one of the yls of the Assores to be placed in the geographical desumption³ of the terrestriall Globe.

¹ Now called Right Ascension, and reckoned in *h. m. s.*

² See page 284, note.

³ "Desumption" may be from "desume", an obsolete word for "to borrow". The first meridian, reckoning from St. Michael's, is thus borrowed from the idea of the first point of Aries being the initial point of celestial longitude.

What is the use of the Equator?

The vse of the Equinoctiall is to know the declination of the Sunne, Moone, and Stars, whereby the latitude of places is giuen, for that portion of the Meridian which is containd betweene the Equator and the Center of the Sunne, Moone, or Starres, is their declination: also by the Equinoctiall is knowne the Longitude of places, for a quarter of a great Circle being drawne from the Pole to the place whose Longitude is desired, and so continued to the Equinoctiall, that degree and minute in which the quarter circle doeth touch the Equator, is the Longitude of the same place, or if you bring any place (that is described vpon the Globe) whose Longitude you would knowe, vnder the Meridian of the Globe, that degree of the Equinoctiall that is then likewise directed vnder the Meridian is the Longitude desired. When the Sunne cometh vpon the Equator, then the daies and nights are of one length through the whole worlde; and then the Sunne riseth vpon the true point of East, and setteth vpon the true point of West, and not els at any time. This circle being fixed in the firmament is moued with the first mouer in euery 15 degrees, by which accompt in 24 howers his motion is perfourmed. And here note that the degrees of the Equinoctiall have a double application, the one to time, and the other to measure: in respect of time 15 degrees make an houre, so that euery degree containeth but 4 minutes of time, but when his degrees have relation to measure, then euery degree containeth 60 minuts being 20 leagues, of that euery minute standeth for a mile after our English accompt.¹

But this allowance of 20 leagues to euery degree of the Equinoctiall, in sayling, or measuring of distances vpon the East and West Corses, is onely when you are vnder the same,

¹ It is not quite clear how Davis reckoned the length of his nautical mile. See *ante*, p. 257.

because the Equinoctiall beyng a parallell, is likewise a great circle, and euery degree of a great circle is truly accounted for 20 leagues, or 60 miles.

But in the rest of the parallells where either of the Poles are eleuated aboue the Horizon, if there you saile or measure vpon ye Corses of east or west, there are not 20 leagues to be allowed to euery degree, because such parallells are lesser circles, therefore they haue the fewer number of leagues to euery degree: so that the further you depart from the Equator the lesser are the parallells, and the lesser that any parallell is, the lesser are his degrees, because euery circle containeth 360 degrees, and as the circles and degrees are diminished in their quantitie, in like sorte the distance answerable to such degrees must abate as their circles do decrease. And further know that the Equator is the beginning of al terrestrial Latitude, and the declination of the celestiall bodies.

What is the Ecliptick?

The Ecliptick line is a great circle deuiding the Sphere into 2 equall partes, by crossing the Equator in an oblique sort, deuiding him, and being deuided by him into 2 equall parts, bending from the Equator towards the North and South 23 degrees and 28 minutes, beyng in the first minute of Cancer and Capricorne, there determining the Tropical limits, this line likewise deuideth the Zodiac by longitude into 2 equal partes, and is deuided together with the Zodiac into 12 equall portions called signes, and euery of these signes is deuided vpon the Ecliptick into 30 equall partes or degrees, so that this line is deuided into 360 degrees, vpon which line the center of the Sunne doth continually mooue: this circle is described vpon his proper poles, named the Poles of the Zodiac, being in all his partes 90 degrees from either of them.

The Zodiac is a circle¹ contrary to all the other, for they are mathematicall lines, consisting only of length, without breadth or thicknes: but the Zodiac hath latitude or bredth 12 degrees,² whose limits are 6 degrees³ of either side of the Ecliptick, wherein the Sun, Moone and Planets performe their motions and reuolutions, the center of the Sun onely keeping vpon the Ecliptick, but the other Planets have sometime North latitude, and sometime South latitude. And here you must vnderstand that the latitudo of the Planets or Starres is that portion of the Eclipticall Meridian which is contained betweene [the] center of the Planet or Star and the Ecliptick line, and their longitudo⁴ is that portion of the line Ecliptick, which is contained betweene the said Meridian and the Eclipticall Meridian that passeth by the poles of the Zodiac and the first minute of Aries.

The 12 deuisions or signes of the Zodiac are these, Aries ♈, Taurus ♉, Gemini II, Cancer ♋, Leo ♌, Wirgo ♍, Libra ♎, Scorpio ♏, Sagittari ♐, Capricorne ♑, Aquarius ♒, Pisces ♓: and these are their characters that stand by them.

The 7 planets that keepe within the limit of the Zodiac are these: Saturno ♄, Jupiter ♃, Mars ♂, Sol ☉, Venus ♀, Mercury ☿, Luna ☾; Saturne performes his course through all the degrees of the Zodiac once in euery 30 yeeres, Jupiter in 12 yeeres, Mars in 2 yeeres, the Sunne in 365 dayes and 6 houres, being one yeere, Venus and ☿ as the Sunne, and the Moone performeth her course in 29 dayes and about 8 houres, through all the degrees of the Zodiac.

And note that this naturall motion of the Planets in the Zodiac is from the West toward the East, the diurnall motion is violent, caused by the first mouer, or primum mobile, who in euery 24 houres doth performe his circular motion from the East to the West, carying with him al other inferior bodies whatsoever,

¹ A zone?² 16 degrees.³ 8 degrees.⁴ Now called right ascension.

What is the vse of the Zodiac?

By the Zodiac and Ecliptick is knowne the Longitude and Latitude of any Celestial body, either Planets or fixed Starres, for a quarter of a great circle drawne from the pole of the Zodiac to the center of any Planet or Star, and so continued vntill it touch the Ecliptick; that degree and minute where the said quarter circle toucheth the Ecliptick, is the longitude of the said body, which is to be accompted from ye first minute of Aries, for the longitude of Aries is the portion of the Ecliptick line, which is containned betweene the eclipticall meridian passing by the poles of the Zodiac, and the first minute of Aries, and the ecliptical meridian which passeth by the poles of the Zodiac and the center of any Planet or Starre.

When the Planets are vpon the North side of the Ecliptick, they haue North latitude, and being South from the Ecliptick they haue South latitude.

Also the motions of the Planets, the time of any Eclipse, and the Sun's declinatio' by his place in the Ecliptick, are knowne by this circle, whose vse is very ample and to great purpose, for all astronomicall considerations.

What are the Colures?

The Solstitiall Colure is a great circle passing by the Poles of the world, and the poles of the Zodiac, and the Solsticial points or first minute of ♎ (Capricorne) and ♋ (Cancer), cutting the Equinoctiall at right Spherick angles, in his 90 and in his 270 degrees.

The Equinoctiall Colure is likewise a great circle passing by the poles of the world and the Equinoctiall point of ♈ (Aries), and ♎ (Libra), and crosseth the equator in his first and 18 degrees, and these Colures doe intersect each other in the poles of the world to the right spherick angles.

What is the use of the Colures?

Their vse is to distinguish the 4 principall seasons of the yere, Spring, Summer, Autumne, and Winter, deuiding the Equator and Ecliptick into 4 equall parts; also that arke of the Solsticiall Colure which is included betweene the first minute of ☊ (Cancer) and the Equinoctiall is the Sunne's greatest declination towarde the North; the like arke being betweene the tropicall point of ☋ (Capricorne) and the Equator, is the Sunne's greatest South declination, being in these our daies 23 degrees 28 minutes.

What is the Tropic of Cancer?

The Tropic of ☊ (Cancer) is one of the lesser circles deuiding the sphere into two vnequal parts, and is described vpon the pole Artick a parallell to the Equator 23 degrees 28 minutes from him, being the farthest limit of the Ecliptick bending towards the North, to which when the Sunne commeth, the daies are the longest to all those that inhabit in the North partes of the worlde, and shortest to the Southern inhabitants: betweene this circle and the Equator are included the 6 septentrionall signes ♈, ♊, ♉, ☊, ♏, ♍, in which signes during the time that the Sunne abideth, being from the 11 of March to the 13 of September,¹ he hath North declination, and then is the spring and summer to all such as inhabite in the North partes of the worlde: this circle doth touch the Ecliptick in the first minute of ☊, where the Sun beginneth his returne toward the South, where-vpon it tooke name Tropic, which signifieth conuersion or returne, by which point of the Ecliptick, the diurnall motion describeth this Circle.

What is the Tropic of Capricorne?

The Tropic of ☋ (Capricorne), is one of the lesser circles

¹ Old Style. Now 20th March and 22nd September.

deuiding the sphere into 2 vnequall partes, and is described vpon the pole Antartick, a parallell to the Equinoctiall 23 degrees 28 minutes from him, being the farthest bending of the Ecliptick towards the South, to which when the Sunne commeth, the daies are then longest to all those that inhabite in the South partes of the worlde, and shortest to the Northern inhabitants: betweene this circle and the Equator are included the 6 southern signes \perp , m , \uparrow , ♋ , ♌ , ♍ , in which signes during the time that the sunne abideth, being fro' the 13 of September to the 11 of March,¹ he hath South declination, and then is the Spring and the Summer to all such as inhabite the South partes of the worlde: and Autumne and Winter to all the inhabitants in the North partes of the worlde. This circle toucheth the Ecliptick in the first minute of ♋ , by which point the diurnall motion describeth this parallel.

What is the vse of the Tropicks?

By the Tropicks the Sun's declination is known, as also the tropicks by the Sunnes farthest motion towards the North and South, for so much as the Tropicks are distant from the Equator, so much is the sunnes greatest declination: and such as is the Suns greatest declining, such is the distance betweene the Tropicks and the Equator: they are also the limits of the burning zone, separating the burning and temperate zone, for betweene the two Tropicks is containd the burning Zone.

What is the Artick polar Circle?

The artick Polar Circle is one of the lesser circles deuiding the sphere into two vnequall partes, and described vpon the Pole Artick in parallell to the Tropick of ♋ , having such distance from the pole as the Tropick hath from the

¹ Old Style. Now 20th March and 22nd September.

Equator, being 23 degrees 28 minutes, vpon which circle the Artick pole of the Zodiac is placed, which beyng ~~fixed~~ in the firmament by the vertue of the first moouer is carried about with the heauens, by which motion this circle is described.

What is the Antartick polar Circle ? .

The Antartick polar circle is opposite to the Artick, and parallel to the Tropicke of φ , being in all respects of such distance and description from and about the pole Antartick as the Artick polar circle is about the pole Artick.

What is the vse of the Artick and Antartick polar Circles ?

The vse of the 2 polar Circles is to show the distance of the poles of the Zodiac from the poles of the World ; for so much as the Solsticiall points are distant from the Equator, so much are the poles of the Zodiac from the poles of the Worlde : the circles doe also deuide and limit the temperate and frozen zones, for betweene the Tropicke of ζ and the Artick polar circle is containned the Northern temperate zone, and betweene the Artick polar circle and the pole Artick, that is within the Artick polar circle, is contained the Northern frozen zone. Also betweene the Tropicke of φ and the Antartick polar circle is included the Antartick frozen zone, and these are all the circles that are described vpon the body of the Globe.

What is the Meridian ?

The Meridian is a great circle passing by the poles of the Worlde, and by your Zenith, deuiding the Horizon into 2 equall parts, in the points North and South, it also deuideth the sphere with al the parallel circles therein contained into 2 equall partes, crossing them at right spherick angles. And this Meridian is not fixed in the firmament as the rest

of the circles are, for, if it were, then should it be moued with the first mouer as the rest are, but it is not so: therefore the Meridian is manifested vpo' the Globe, by a circle or ring of copper fastened vnto the Globe, vpon the 2 poles, so that the Globe moueth round vpon his 2 poles within the Meridian. This Meridian is graduated in euery of his quarters into 90 degrees, by which his vse is perfourmed: and note that one Meridian may have many Horizons, yet euery Horizon hath but one Meridian, for if you trauaile South or North you keepe still vpon the same Meridian, yet in euery sencible difference of distance you shall enter into a change of Horizons, for there be as many Horizons as there be sencible differences of distance, and there be as many Moredians as there be sencible differences of distance, so that the difference be not vpon the points North and South, but this copper Meridian annexed to the Globe is to be applyed to all differences and distances whatsoever, as amply as if the number were infinite.

What is the vse of the Meridian ?

The vse of the Meridian is to know the highest ascending of the Sun, Moone, or Starres from the Horizon, for when they bee vpon the Meridian then are they farthest from the Horizon, and then is the most conuenient time to take the altitude of the Sunne or Starres, thereby to finde the Poles eleuation.

By the Meridian of your Globe is known the latitude and longitude of any place upon the Globe contained, for if you bring any place vnder the Meridian, the degrees of the Meridian do shew the latitude of the same, and that degree of the Equator which the Meridian doth crosse is the longitude, &c.

What is the Horizon ?

The Horizon is a great circle deuiding the heauens into 2 equall partes, the one half being aboue the Horizon is

alwaies in sight, the other half is not seene, being under the Horizon, and therefore is called the finitor or limit of our sight; for where the heauens and seas seeme to ioyne together, that is the Horizon: the Horizon is not fixed in the firmament, and yet is a fixed circle constant to his proper latitude, but because in the Globe one and the same Horizon may perfourme whatsoeuer is required to all the elouations, the Horizon is so artificially annexed to the Globe, that by the motion of the Meridian, in the same there faulth nothing in his vse, and the Horizons in all respects distinguished, as is the Sea Compasse. There are two kindes of Horizons, a right Horizon and an oblique Horizon. When the Poles are in the Horizon then it is a right Horizon, for then the Equator doth cut the Horizon to right angles, making a right Sphere and a right Horizon. An oblique Horizon is where either of the Poles are eleuated aboue the same, for then the Equator doth cut the Horizon to vnlike angles, making an oblique Sphere and an oblique Horizon, and although the Horizons be diuers and many in number, for euery sencible difference of distance hath his proper Horizon, yet is the Horizon of the Globe so conueniently annexed there vnto, as that by the mouing of the Meridian in the Horizon, and by the Globe's motion in the Meridian, both the Horizon and Meridian are to be applyed as proper to all places whatsoeuer, and note that the place where you are is alwayes the center of the plaine superficiall Horizon.

What is the vse of the Horizon?

The Horizon is the beginning of all altitude, for whatsoever is aboue the Horizon is sayd to haue altitude more or lesse, and by the Horizon such altitudes are giuen with helpe of the crosse staffe, for placing the crosso staffe at your eye, if by the one end of the transuersary you see the Horizon, and by the other end (at the same instant) you see the body observed, then doth the transuersary show vpon the

staffe the altitude desired. By the horizon the nauigable courses from place to place are likewise known, as also the quantitie of the rising and setting of the Sunne, Moone, and Starres, whereby is knowne the length of the daies and nights in all climats, and at all seasons. By the Horizon is knowne vpon what degree of Azumuth the Sun, Moone, or Starres are, when they may be scene, in what part of the Heauen socuer, whereby the variation of the Compasse is found, and the Poles altitude may at all seasons be given.

Are these all the circles appertaining to the Globe?

There are other circles which are fixed and doe properly appertaine to euery particular Horizon, as Azumuths, Almucanters,¹ the Artick and Antartick circles.

What are the circles of Azumuth?

Circles of Azumuth, or verticall circles, are quarters of great circles, concurring together in the Zenith, as the meridians do in the pole, and are extended from the Zenith to euery degree of the Horizon, &c. And because they cannot be conueniently described vpon the Globe to bee applied to all horizons, therefore vpon the Meridian of the Globe there is a peece of copper artificially placed, to be remoued to any degree of the Meridian at pleasure, which peece of copper representeth the Zenith, and must alway be placed so many degrees from the Equator as the Pole is eleuated from the horizon: and vnto this zenith there is ioyned a quarter of a great circle called *Quarta altitudo*,¹ the end whereof doth continually touch the horizon, and is so ioyned to the Zenith, as that it may be moued round about vpon the horizon, and to euery part thereof at your pleasure. This *Quarta altitudo* is deuided into 90 degrees,

¹ Now called the Quadrant of Altitude. It is generally graduated so as to measure 18° below the horizon, that being the position of the crepusculum or twilight circle, where dawn begins and twilight ends.

being the distinction of all altitude, and beginneth the account from the horizon, which is the beginning of altitude, and concludeth 90 degrees in the Zenith, being the end and extreme limit of all altitude.

What are Almicanter's ?

Almicanter's¹ are circles of altitude, are parallel circles to the horizon, and are described vpon the Zenith as the parallels to the equator, are described vpon the Poles, of which circles there are 90 answerable to the distinctions of the *Quarta altitudo*, which are the degrees contained betweene the horizon and zenith; these circles cannot be described vpon the Globe to bee applyed to euery horizon, but they are distinguished by the circular motion of the *Quarta altitudo*, for if I desire to see the Almicanter circle of 10 degrees, by mouing the *Quarta altitudo* round about the horizon, the Zenith degree of their quarter circle doth show the Almicanter desired in what eleuation soeuer.

What is the vse of these two circles ?

The *Quarta altitudo* perfourmeth the vse of both by the *Quarta altitudo* and Horizon; the courses fro' place to place are knowne according to the true Horizontal position as hereafter shall plainly appeare: it also sheweth the degree of Azimuth, and observed altitude of any celestiall body, in what latitude soeuer. By the *Quarta altitudo* and horizon you may describe a paradoxall compasse vpon the Globe. The Pole's height is at all times thereby to be known, and the variation of the Compasse is thereby likewise giuen, as hereafter in the practise you shall be taught.

What are the Artick and Antartick circles ?

Euery Horizon hath his proper Artick or Antartick circle, those horizons that haue the Pole Artick eleuated aboue

¹ Almicanter is a circle parallel to the horizon, same as a parallel of altitude.

them haue their proper Artick circle, and those that haue the South pole eleuated haue their proper Antartick circle, the quantitie of which circle is according to the Pole eleuation, for if the Pole be much eleuated then is the Artick circle great, for the Poles altitude is the semidiameter of this circle; if the pole be in the Zenith then halfe the heauens is the Artick circle.

What is the vse of this circle?

If the Sunne, Moone, or any Starres be within this circle they are neuer caried vnder the horizon during the time of their abode therein, whervpon it commeth to passe that such as trauaile far towards the North haue the Sunne in continual uiewe, and those that inhabite vnder the pole (if any so doe) the Sun is in continuall sight for sixe moneths together, because the sixe Septentrionall signes are within the Artick circle, the Equator being in the horizon, &c.

There is another small circle which is called Circulus horarius, or the hower circle, to be annexed to the Meridian of the Globo, for the perfection of his vse; this circle must be deuided into 24 equal partes or howers, and those againe into such parts as you please for the better distinction of time: this circle, vpon which pole there must be fastened an Index to moue proportionably, as the sphere upon any occasion shall be moued.

There is also an halfe circle, called the circle of position, which sith it serueth to no great purpose for Nauigation I here omit, and thus is the Globe fully finished for the perfection of this vse.

What are the Poles of the world.

Those are two Poles; the North artick Pole, and the South or Antartick Pole, which poles are immouable prickes fixed in the firmament, whereupon the sphere is moued by vertue of the first mouer, and are the limits of the Axis of the

world, as also the extreme terme or band of all declination, being 90 degrees from all partes of the Equator.

By the raising of the Pole from the Horizon is knowne the parallell or latitude of our being, it also giueth the quantities of the Artick circle, and the obliquetie of the sphere.

What is the Axis of the world?

The Axis of the world is a right line passing by the center of the sphere, and limited to the circumference about which the sphere moueth, and is therefore called the Axis of the Sphere; and as all lines comensurable are limited betweene two pointes or prickes, so is the Axis of the world, and those two limiting prickes are called the Poles of the world.

What are the Poles of the Zodiac?

The zodiac hath likewise two Poles, Artick and Antartick, being two prickes fixed in the firmament, limiting the Axis of the zodiac, and are distant from the Poles of the world 23 degrees 28 minutes, which Poles by the motion of the Sphere doe describe the Poles circle, perfourming their motion about the Poles of the worlde in euery 24 howers, by vertue of the first mouer. Vpon these poles the Ecliptick and Zodiac is described, also a quarter of a great circle graduated into 90 degrees, beying fastened to either of these Poles and brought to the center of the Star, sheweth by that graduation the latitude of the same Starre, and where the quarter circle toucheth the Ecliptick, that is likewise his longitude, also the 7 planets do perfourme their naturall reuolutions vpon these poles, whose motion is from the West towards the East, contrary to the motion of the first mouer.

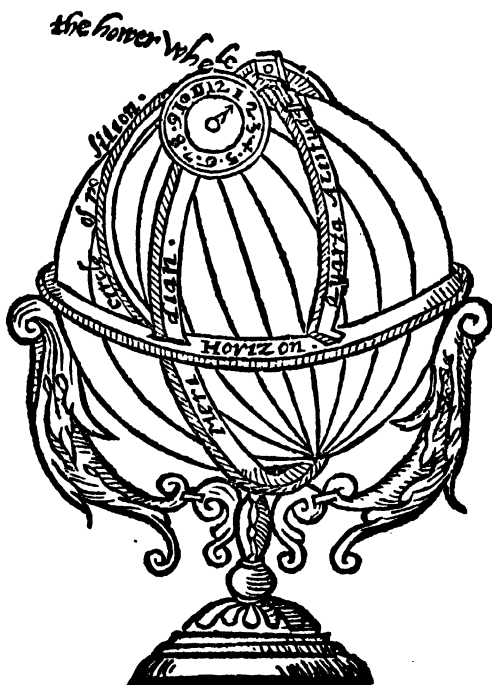
What is the Axis of the Zodiac?

The Axis of the zodiac is a right line passing by the center of the sphere, and limited in the circumference, whose

limiting poyntes are the Poles of the Zodiac, and this Axis is moued by the Sphere as are his Poles.

What are the Poles of the Horizon?

There are two poles of the Horizon, which are the limits of his perpendicular dimetient, being equidistant 90 degrees from all parts of the Horizon, and are the extreme limits of all altitude. That pole which is in the vpper Hemisphere is called the zenith, and his opposite Pole is called the nadir; they are extended in the firmament but not fixed in it, for they moue neuer, but remaine alwaies stable to their proper horizon, which could not be if it were fixed in the firmament, for then should they be mooued with the firmament as the rest are. By the helpe of these poles is found the



Azumuth and Almicanter of any celestiaall body; for a quarter inch deuided into 90 degrees, and fixed to the Zenith, as is the *Quarta altitudo*, beyng mooued to any celestiaall body, doth by those degrees shewe the almicanter or altitude of the same body from the Horizon, and that parte of the Horizon which the quarter circle toucheth, is the Azumuth of the same body, alwaies provided that the Zenith stand answerable to the poles elenation, that is, so many degrees from the Equator as the Pole is from the Horizon.

How many Zones be there?

There are 5 zones—2 temperate zones, 2 frozen zones, and one burning zone. The burning zone lieth betweene the two Tropicks, whose latitude is 46 degrees 56 minutes, which zone by auncient Geographers is reported to be not habitable, by reason of yo great heat which there they supposed to be, through the perpendicularitie of the Sunne beames, whose perpetuall motion is within the said zone, but we finde in our trauels, contrary to their reporte, that it is not onely habitable, but very populous, containing many famous and mightie nations, and yeeldeth in great plentie the most purest things that by natures benefits the earth may procreate: twico I have sayled through this zone,¹ which I found in no sorte to bee offensive, but rather comfortable vnto nature, the extremitie of whose heat is not furious but tollerable, whose greatest force lasteth but 6 howers, that is, from 9 of the clocke in the morning vnto 3 in the afternoone, the rest of the day and night is most pleasing and delightful, therefore they did nature wrong in their rash reporte.

Of the frozen Zones.

The frozen zones are contained within the polar circle, the Artick frozen zone within the Artick polar circle, and the

¹ In his voyage in the *Desire*, 1591 to 1593.

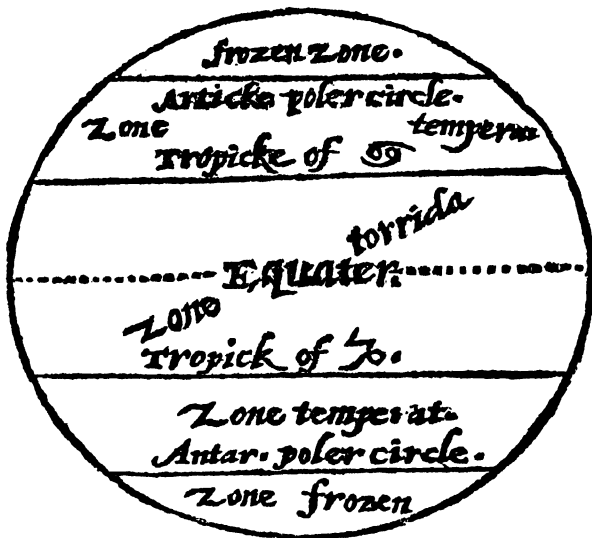
antartick frozen zone within the Antartick polar circle, which are also reported not to be habitable, by reason of the great extremity of colde, supposed to be in those parts, because of the Sunnes far distance from those zones, but in these our dayes we find by experience that the auncient Geographers had not the due consideration of the nature of these zōnes, for three times I haue been within the Artick frozen zone, where I found the ayre very temperate, yea and many times in calme wether marueilous hot : I haue felt the Sunne beames of as forcible action in the frozen zone in calme neere vnto the shore, as I haue at any time found within the burning zone ; this zone is also inhabited with people of good stature, shapo, and tractable conditions, with whom I haue cōuerced and not found them rudly barbarous,¹ as I haue found the Caniballs which are in the straights of Magilano and Southerne parts of America. In the frozen zone I discovered a coast which I named Desolation at the first viewe thereof, supposing it by the loathesome shape to bee wast and desolate, but when I came to ankor within the harbours thereof the people presently came vnto me without feare, offering such poore things as they had to exchange for yron nailes and such like, but the Canibals of America flye the presence of men, shewing themselues in nothing to differ from bruto beastes : thus by experience it is most manifest that those zones which haue beene esteemed desolate and waste, are habitable, inhabited and fruitfull. If any man be perswaded to the contrary of this truth, he shall doe himselfe wrong in hauing so base an imagination of the excellency of Gods creation, as to think

¹ The experience of the Eskimos, here recorded by Davis, is fully borne out by the accounts of modern explorers. They are singularly contented, notwithstanding the rigorous climate in which they live, and those who have become most intimately acquainted with them in their wild state, like Dr. Kane and Mr. Hall, have borne testimony to their good qualities.

that God creating the world for mans vse, and the same being deuided but into 5 partes, 3 of those partes should bee to no purpose: but let this saying therefore of the Prophet Esayas be your full satisfaction to confirme that which by experience I have truely spoken. "For thus sayeth the Lorde that created heauen, God himselfe that framed the earth and made it, hee that prepared it, hee created it not in vaine, hee framed it to bee inhabited, &c." Esay. 45, 18.¹

Of the temperate Zones.

The temperate Artick zone is included betweene the Tropick of \mathfrak{C} (Cancer), and the Artick Polar circle, whose



latitude or bredth is 42 degrees, 2 minutes, within the which we have our habitation.

¹ Isaiah xiv, 18. "For thus saith the Lord that created the heavens, God himself that formed the earth and made it; he hath established it, he created it not in vain, he formed it to be inhabited."

The temperate Antartick zone is limited by the tropick of ♍ (Capricorne) and the Antartick Polar circle, and hath breadth or latitude 42 degrees, 2 minutes.

What is a Climate ?

A climate is the space or difference vpon the vpper face of the earth, included between two parallells, wherein the day is sensibly lengthened or shortened half an hower, for as you trauail from the Equator toward the Artick Pole, the Sunne having North declination, the dayes do grow longer and longer, vntill at last the Sunne not setting vnder the horizon, you shall haue continually day, and euery space or distance that altereth the day halfe an hower, is called a climate : these climates take the names from such famous places as are within the said Climates, of which there are 9, as by their distinctions may appeare.

1. The first, passing through Meroe, beginneth in the latitude of 12 de. 45 m. and endeth in 20 d. 30 m. whose bredth is 7 d. 45 m.

2. The second, passing through Syene, beginneth in the latitude of 20 de. 30 m. and endeth in 27 d. 30 m., whose bredth is 7 d.

3. The third, passing through Alexandria, beginneth in the la. of 27 d. 30 m. and endeth in 33 d. 40 m., whose bredth is 6 d. 10 m.

4. The fourth, passing by Rhodes, beginneth in the la. of 33 d. 40 m. and endeth in 39 d., whose bredth is 5 d. 20 m.

5. The fifth, passing by Rome, beginneth in the la. of 39 d. and endeth in 43 d. 30 m., whose breadth is 3 d. 45 m.

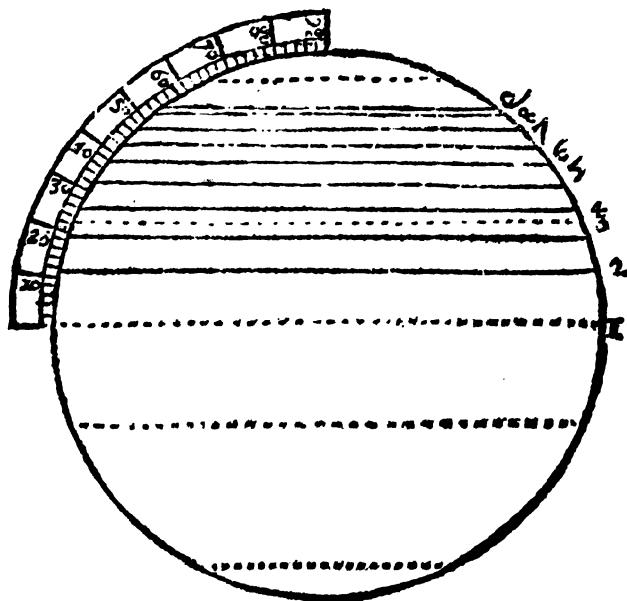
6. The sixt, passing by Boristhines, beginneth in 43 d. 39 m. and endeth in 47 d. 15 m., whose bredth is 3 d. 45 m.

7. The seventh, passing by the Rhipaan mountaines, beginneth in 47 d. 15 m. and endeth in 50 deg. 20 m., whose bredth is 3 d. 5 m.

8. The eight, passing by Meotis or London, beginneth in

50 d. 20 m. and endeth in 52 d. 10 m., whose bredth is 2 d. 50 m.

9. The ninth, passing by Denmark, taketh his beginning in the latitude of 53 d. 10 m. and endeth in the latitude of 55 d. 30 m., and hath in bredth 2 d. 20 m.



If you desire to know how many leagues euery climate is in bredth, allow for euery degree 20 leagues, or 60 miles, and for euery minut a mile, so is the distance given.

Thus haue I manifested vnto you all the diuisions and particularities of the Spheres distinction.

What is the vse of the Globe?

The vse of the Globe is of so great ease, certainty, and pleasure, as that the commendations thereof cannot sufficiently be expressed, for of all instruments it is the most rare and excellent, whose conclusions are infallible, giuing

the true line, angle, and circular motion of any corse or trauers that may in Nauigation happen, whereby the longitude and latitude is most precisely knowne, and the certainty of distance very plainly manifested, according to the true nature thereof; it giueth the variation of the compasse, and the hower or time of the day at all seasons, and in all places. And by the Globe the poles height may at all instants and vpon euery point or azumuth of the Horizon by the Sunnes altitude taken be most precisely knowne, by the certainty of whose excellent vse, the skilful pilot shal receiue great content in his pleasing practise gubernautick.

How are distances measured vpon the Globe?

When there are 2 places assigned, the distance betweene which you desire to know, with a paire of circular compasses you must doe it in this sort: set one foote of the compasses vpon one of the places, and the other foote vpon the other place, the Compasses so stretched forth, bring vnto the Equator, and as many degrees as may be contained betweene those two points of the Compasse, allowing 20 leagues for euery degree, is the distance desired: or if the places be of such distance as that you cannot with your compasses reach them, then take with the Compasses 5 degrees of the Equator, which is 100 leagues, or 10 degrees for 200 leagues, and so measure how often the distance is contained betweene the said places, if any parte of a degree doth remaine, for halfe a degree allow 10 leagues, for a quarter 5 leagues, &c.; but if you desire a most exquisite precisenes in measuring to the minute, second and third, then do thus. When your Compasses doth fall vpon any part of a degree, note ye distance betweene the end of that degree and the point of the compasses, then with a paire of conuenient compasses take the distance, then measure the same 60 times vpon the equator (beginning at some certaine place), then consider

how many degrees are cōtained within the measure, and allow euery degree to be a minut or mile, so are the leagues and miles known ; if any parte of a degree remaine vpon this measure of minuts, do as at the first, measuring the same 60 times vpō the equator, tho degrees cōprehended within the measure are seconds ; if any parcell of a degree remaine vpon these seconds do as in the first, and the degrees contained in this measure are thirds, and so you may proceed infinilly.

How may the Globe be rectified answerable to the true position of the heavens for any place, city, or promontory ?

The place being knowne for which you would rectifie the Globe, doe thus bring the place vnder the Meridian, and there consider the latitude thereof : and as many degrees as that place is from the Equator, so many degrees you must eleuate the pole from the Horizon, then bring the Zenith directly ouer the same place, and so is your Globe rectified for the execution of any practise : and without this ordering of the Globe, there is no conclusion to be executed by the same.

How is the longitude of places Knowne by the Globe ?

By turning the Globe within the Meridian, you must bring the Promontory, Bay, Harborow, Citie, or other place (whose latitude and longitude you seeke) precisely vnder the Meridian, thero holding the Globe steady, the degree of the meridian that is directly ouer the said place sheweth the latitude thereof, and that degree of the equinoctiall which is directly vnder the Meridian is the longitude of the same place.

How is the Corse found betweene place and place ?

Two places being assigned, the Corse betweene which you desire to know, first seeke the latitude of one of these

places, and rectify the globe answerable vnto the same, as before is taught, then bring that place directly vnder the Meridian and zenith, if both places be vnder your Meridian they then lie North and South, if not, then bring the *Quarta Altitudo* to the other place, and note vpon what part of the Horizon the end of the same toucheth, for that is the precise Horizontall Corse between the said places, but this you must consider, that the Horizontall Corse is not the nauigable corse, vnles the places be of smal distance, for if any place bear Northeast frō me, or East from me, or vpon any other point, North or South excepted, and be distant 500 leagues, if I sailo vpon the Horizontall Corse, I shall never arriue vnto the same place.

How then shall the Pilote saile by the Globe, if the matter be so doubtfull?

The skilfull Pilote that vseth this excellent instrument doth first consider the place from whence he shapeth his corso and rectifieth the Globe answerable to the same, then bringing the place directly vnder the Meridian and zenith, there holding the Globe steady, bringeth the *Quarta Altitudo* to the place for which he is bound, the end whereof sheweth vpon the Horizon the true Horizontall Corse, vpon which Corse he sailoth 20 or 30 leagues, and there maketh a note or pricke by the edge of his *Quarta Altitudo*, according to the true distance proued by Corse, reckoning an altitude as in the vse of a chart; then he bringeth that prick or note vnder the Meridian, and there considereth the true latitude of his beying, he then rectifieth the globe answerable to the same prick, and keeping the same vnder the Zenith, doth againe turne the *quarta altitudo* to the place for which he is bound, the end whereof sheweth vpon the Horizon the Horizontal Corse; then sayling as at the first he maketh a note or pricke as before, and thus prosecuting his Corse, shall ariue vnto his desired place; but in this practise he

shal plainly proue that his Horizontall Corse will differ greatly, and that by his sayling in this sorte, he shall by his notes and pricks describe the true nauigable and neerest Corses betweene the said places. The like methode is to be obserued upon any trauers or forced course whatsoever; and therefore the Pylote must take care, that although the winde be neuer so fauourable, yet he must not prosecute any Horizontall Corse (North and South onely excepted).

Therefore I say the Pylote must take special care to consider the distance of places, whether the Horizontall Corse will lead him betweene the said places; for if places be more then 45 degrees asunder, the Horizontall Corse is not the meane to find those places, vnlesse they lie north and south; for the horizontall course betweene any 2 places is a portion of a great circle, which being of large distance must be perfourmed by great circle nauigation and not by Horizontall Corses; for the collection of many Horizontall Corses being knit together, doe performe a^r paradoxall motion altogether differing from a great circle, as for an example, being at Cape Verde, there is a place distant from me 80 degrees, vpon the point Northwest, vnto which place I desire to saile, I therefore bring Cape Verde vnder the Meridian of my Globe, then considering the latitude of the Cape, I rayse the pole answerable to the same, and place the Zenith directly ouer the Cape, then turning the *quarta altitudo* to the point Northwest vpon the Horizon, all such places as the sayde *quarta altitudo* then toucheth doe beare due North west from me; now prosecuting this Corse by the direction of my Compasse, the first day I saile 20 leagues, therefore I make a mark by the edge of the *quarta altitudo*, 20 leagues from the Zenith, then bringing that marke vnder the Meridian, I rectifie the Globe answerable to the latitude thereof; the next day I saile other 20 leagues vpon the same point, and make a marke as at the first, I bring that marke likowise

vnder the Meridian and rectifie the Globe as before, and by this methode prosecuting the Corse N.W. I shall describe a paradoxall line which will leade me to the North of the place vnto which I would sayle, the farther the distance the greater the difference; by this order you may describe paradoxall lines vpon all the points of the Compasse, but this is to be regarded, that your differences be as small as you may, and that none of them exceed 20 leagues, for by the smallest distinctions is performed the greatest certaintie. And by the description of these lines you may very manifestly vnderstand the difference of Horizontall paradoxall and great circle Navigation.

And this may suffice for the sayling vso of the Globe conuenient for the Seamans purpose.

What is the great Circle navigation?

Great Circle navigation is the chieftest of all the 3 kindes of sayling, in whom all the other are contained, and by them this kinde of sayling is performed, continuing a Corse by the shortest distance betweene places, not limited to any one Corse, either horizontall or paradoxall, but by it those Courses are ordered to the full perfection of this rare practise, whose benefites in long voiajes are to great purpose, ordering & disposing all horizontall traueses to a perfect conclusion; for there are many changes of horizontall and paradoxall Courses in the execution of this practise, so that vpon the shifting of a wind, when that it may seeme that you are forced to an inconuenient Corse by the skill of great Circle sayling, that Corse shall be found the shortest and onely proper motion to perfourme your voiage. And also when with fauourable windes the Pylote shall shape a Corse by his Chart or Compass paradoxall, as the best meane to attaine his porte, he shal by this kinde of sayling finde a better and shorter Corse, and by sufficient demonstration prooue the same, so that without this know-

ledge I see not how Corses may be ordered to their best aduantage ; therefore sith by it perfection of sayling is largely vnderstood, & the error likewise most substantially controled, it may of right challenge the chiefest place among the practises Gubernautick.¹ The particularities whereof, if I should by an orderly methode labour to expresse, it would be a discourse ouer large for this place, and as I thinke troublesome if the premises be not well vnderstood ; therefore I will now ouerpasse it, vntill a time more conuenient and of better leasure.

Of paradoxall Nauigation.

Paradoxall Nauigation demonstrateth the true motion of the Ship vpon any Corse assigned, in his true nature, by longitude, latitude, and distance, giuing the full limit or determination of the same, by which motion lines are described neyther circular nor straight, but concurred or winding lines, and are therefore called paradoxall, because it is beyond opinion that such lines should be described by plaine horizontall motion ; for the full perfection of which practise I purpose (if God permit) to publish a paradoxall Chart, with all conuenient speede, as so will discouer by the same at large, all the practises of paradoxall and great circle nauigation, for vpon the paradoxall Chart it will best serue the Seamans purpose, being an instrumēt portable, of easie stowage and small practise, perfourming the practices of Nauigation as largely and as beneficially as the Globe in all respects ;² and all these practises of sayling before

¹ Modern navigators, who turn their attention to Great Circle Sailing as a means of shortening long ocean passages, might learn useful lessons from the subjects treated of by Davis between pages 309 and 314. By taking a terrestrial globe to sea, duly fitted with the quadrant of altitude, they would save themselves much laborious calculation by utilizing this "rare and excellent" instrument under Davis's instructions.

² These remarks show that Davis saw the necessity for giving the sea man and pilot some better chart than the plane chart then in use, so as

mentioned, may in a generall name be aptly called Nauigation Geometricall, because it wholly consisteth of Geometricall demonstratiue conclusions.

But there is another knowledge of Nauigation, which so farre excelleth all that is before spoken, or that hath hitherto beene vulgarly practised, as the substance his shadow, or as the light surpasseth the thick obscured darknesse; and this sweete skill of sayling may well be called Nauigation arithmetically, because it wholly consisteth of Calculations, comprehended within the limit of numbers, distinguishing Courses not onely vpon the points of the Compasse, but vpon every degree of the Horizon, and giueth the distance of any trauers for the particular eleuation of minutes; yea, and lesse partes assure your selfe: it giueth longitudes and latitudes to the minute, second, and third, in so great certaintie, as that by no other meanes the like can be perfourmed: it teacheth the nature of Angles and Triangles, as well Sphericall as plaine, superficial and solide commensurations, the effect of lynes straight, circular, and paradoxall; the quantities and proportions of parallels, the nature of Horizons, with euery particular distinction of any alteration whatsoever that may in Nauigation be required, to a most wonderfull precise certaintie; for there can nothing be required that by this heauenly hermonie of numbers shall not be most copiously manifested to the Seamans admiration and great content:¹ the orderly practise

to relieve him from the crude method of working an ordinary day's work by fidgiting out the courses and distances by means of a rudely constructed globe, and then plotting them on an erroneously graduated chart. Davis's "paradoxall chart", which he proposed to publish, was probably some scheme for representing the globe on a flat surface, with due regard to the convergence of the meridians, thus giving approximately the relative sizes of the miles of latitude and those of longitude.

¹ Davis had evidently made some discovery of a means of handling figures, whereby the pilot might be able to navigate by the surer method of calculation. This discovery he terms "Navigation arithmeti-

whereof, to the best of my poore capacitie, I purpose to make known, if I may perceiue my paines already taken to be receiued in good parte, which I distrust not but all honest minded Seamen and Pylots of reputation will gratefully embrace, onely in regarde of my friendly good will towards them, for it is not in respect of my paines but of my loue, that I would receiue fauourable curtesie.¹

How may the Poles height be knowne by the Globe?

There are diuers waies to find the poles height by the Globe, as well from the Meridian as vpon the same, but sith before I haue sufficiently taught how, by the Sunnes Meridian altitude, the poles height may be found, I will therefore in this place speake no further thereof, but for the other kinds it may be knowne as followeth.

How by the Sunes rising or setting the Poles height may be knowne.

By your Compasse of variation, or some magneticall instrument, obserue at the sunne rising, vpon what degree of the horizon the center toucheth, according to the true horizontall position of the Magnet, all variation duely considered; that being knowne, search in the tables of the Ephemerides for the Sunnes place in the Ecliptick at the time of your obseruation, then bring that place or degree of the Ecliptick

cal", meaning probably, in the first place, a traverse table and a table of meridional parts, and then some method of numbers similar to that which Napier gave to the world a few years later, in the shape of logarithms.

¹ This passage shows how well Coleridge had caught the spirit of England's Elizabethan naval worthies, when he put into the mouth of his "Ancient Mariner", the words:—

"He prayeth best, who loveth best
All things both great and small;
For the dear God who loveth us
He made and loveth all."

wherein you finde the Sunne to be to the Horizon, and mooue the Meridian of the Globe as occasion requireth, vntill that obserued degree of the Horizon and the Sunnes place in the Ecliptick doe iustly touch together, for then is the pole in his due Eleuation, as by the intersection of the Horizon and Meridian may appear: in like sort you may find the Poles altitude by any knowne fixed Starre in the Horizon.

To finde the poles height by the Sunne vpon any point of the Compasse.

By the Compasse of variation, rectified to the true horizontall position, obserue the Sunne, vntill he come to any point thereof at your pleasure, and in the same instant take the Suns height from the Horizon, then bring the *quarta altitudo* to that point of the Compasse vpon the Horizon of the Globe where you obserued the Sunne to be, there holding the *quarta altitudo* steady, mooue the Globe, vntill you bring the degree of the Ecliptick (wherein the Sunne is at the time of your obseruation) vnto the edge of the *quarta altitudo*, if it fall vpon that degree of altitude, as was the Sunnes obserued height; then doth the Pole stand to his true Eleuation, but if it agree not you must eleuate or depresse the Pole, as occasion requireth, rectifying the Zenith answerable therevnto. And, againe, make trial, as at the first, bringing the place of the Sunne to the *Quarta altitudo*, and setting the same vpon the obserued point of the Compasse, vntill it agree in all respects with your obseruation, and then the Meridian showeth in his intersection with the Horizon the eleuation of the Pole from the Horizon.

To find the Poles height by any giuen Azumuth by the Sun being aboue the Horizon.

By your magnetical instrument or compasse of variation obserue the azumuth of the Sun at any time in the forenoon or afternoone, the neerer the Sun is to the Horizon the

better shal be your obseruation, and at the same instant take the height of the sun from the Horizon, keep these two numbers in memory, and note that the Azumuth be obserued according to the true position of the Horizon, by hauing good regard to the variation of ye compas, then bring the *quarta altitudo* to the place of the Sun in the Ecliptick, and set that degree of the Sunnes place in the Ecliptick vpon the obserued degree of altitude, by the graduation of the *Quarta altitudo*; and if the ende thereof at the same instant do all right vpon the obserued degree of Azumuth then is the Pole in his due Eleuation: if not, then raise or lay the pole, as occasion requireth, alwaies regarding that you place the Zenith answerable to the Poles altitude, and then againe bring the Sunnes place to his altitude vpon the *Quarta altitudo*, and looke againe whether the ende thereof do touch the obserued degree of Azumuth vpon the Horizon; if not, you must prosecute this order, vntill at one instant the place of the Sunne be vpon his true almicanter, by the edge of the *Quarta altitudo*, and that the end of the *quarta altitudo* doe also touch the obserued degree of Azumuth vpon the Horizon, for then is the Pole in his true eleuation, as by the Meridian and Horizon will appeare.

To find the Poles height by the Sunne by any two giuen Azumuths and altitudes, not regarding the true horizontall position or needles variations.

Because there may great errors be cōmitted in the former obseruations, vnlesse the Compasse be perfectly well rectified, so as it may respect the true partes or distinctions of the Horizon, it is not amisse to enforme you how, without regard of variation, the Poles height may be found. Therefore by your Magneticall instrument or Compasse of variation obserue the Sunnes azumuth, without regard of the true horizontall position, and at the same instant obserue also his altitude from the Horizon, keepe those two numbers

in memory, then after the Sun hath moued a point or two points of the compasse, more or lesse at your discretiō, obserue again his Azumuth and altitude, as at the first, then consider the arke of the Horizon through which the Sunne hath moued between these two obseruations, for by the two obseruations of the Sunnes altitude, and by the degrees of Azumuth through which the Sunne hath moued the Poles height is thus knowne. First set the Globe to the eleuation of the place wherein you are, as neere as you can gesse, and bring the Zenith to the like latitude from the Equator as the poles eleuation is from the Horizon, then bring the *quarta altitudo* to the place of the Sunne vpon the Ecliptick for the time of your obseruation, there place the Sunne vpon the first obserued altitude by the degrees of the *quarta altitudo*, and note the degree of the Horizon which the *quarta altitudo* then toucheth: this done, bring the Sunnes place to the second obserued altitude, by moouing the *quarta altitudo* and the Globe vntill the degree of the Sunnes place in the Ecliptick and the degree of his altitude vpon the *quarta altitudo* doe meete. Then, againe, consider the degree of the Horizon which the end of the *quarta altitudo* toucheth, and note the ark of the Horizon contained betweene your two obseruations, of howe many degrees it consisteth if it agree with the obseruations made by your Magneticall instrument, then doth the Pole stand in his true altitude, if not, you must either raise or depresse the Pole, and againe prosecute the former practise, vntill you find such azumuths and altitudes vpon the Globe as you found by your Magneticall obseruations, for then the Pole doth stand in his true altitude, and then doth also appeare the true Azumuth of both your obseruatiōs, which, if it agree not with your compasse, then is your compasse varied, and may hereby bee corrected, so that this doth not onely giue the Poles height, but also the true horizontall position without error.

To find the Poles height by taking the Suns altitude above the Horizon, so that the precise time of any such obseruation be knowne.

If you desire at any time of the day to know the Poles height, as at 8, 9, or 10 of the clocke, etc., marke diligently the time of your obseruation, at what instant you doe obserue the Sunnes altitude from the Horizon; the time and altitude thus known, bring that place of the Ecliptick wherein the Sunne is at the time of your obseruation directly vnder the Meridian, there, holding the Globe stedio, bring the Index of the *circulus horarius* to the hower of 12, or noone, then moue the Globe vntill the Index come to the hower of your obseruation, there hold the Globe stedy, then bring the *quarta altitudo* to the place of the Sunne in the Ecliptick; if it agree with your obserued altitude, then doth the pole stand in his true eleuation, if not, moue the Meridian, by raising or depressing the pole as occasiō requireth, vntil you bring the altitude and the hower to agree, and then you haue the poles height, and by the end of the *quarta altitudo* doth also appaere the degree of azumuth, whereupon the Sun was at the time of your obseruation, and note that in raysing or depressing the pole of the Globe you must also place the Zenith so farre from the Equinoctiall as the pole is from the Horizon, for this is a generall rule, that so much as the pole is eleuated from the Horizon so much is the latitude of the Zenith from the Equator, therefore you must alwaies bring the Zenith and altitude to agree whensoever you alter the Eleuation, be it never so little.

To find the Poles height by any two obseruations of the Sunnes altitude, not regarding the hower of the day, or any horizontall position of the Magnet, so that you know the distance of time between the said obseruations.

Although there be some difficultie in giuing the true time of any obseruations at sea, by reason of the alteration

of Horizons, and of the needles variation, yet it is a matter most easie by a good hower Glasse, halfe hower Glasse, and minute Glasse, to measure the distance of time betweene any two observed altitudes, you may therefore vpon that ground find the poles height with great facilitie at any time, by the Sunne or any fixed Starre, in this sorte.

Consider in what place of the Ecliptick the Sunne is at the time of your obseruation, bring that place to the Meridian, then with a blackeleade, by moouing the Globe, describe a parallell to the Equator, answerable to the Sunnes diurnall motion and declination for the same instant, then if betweene your obseruations there be an hower, two howers, more or lesse at your pleasure, as by your running glasses may be knowne, you must allowe for euery hower 15 de. of the Equator, for so much ascendeth euery hower, and for euery 4 minutes one degree, and for euery minute $\frac{1}{4}$ of a degree, then knowing by this order how many degrees the sunne is mooued between your 2 obseruations, you must vpon the parallel which you drawe make 2 notes, so many degrees asunder as the Sunne hath mooued betweene your obseruations, which may be done in this sorte: bring the place wherein the Sun is vnder the Meridian, and marke what degree of the Equator is then vnder the Meridian, the Globe so standing vpon your parallell close by the Meridian, make the first note or marke, then turne the Globe, and reckon yo degrees of the Equator that passe vnder the Meridian, vntil so many be past as was your obseruation, there againe holde the Globe stedy and vpon your parallell, close by the Meridian, make your second note or marke; then knowing the Sunnes altitude at both the obseruations, you must bring the *Quarta Altitudo* to the first note made vpon your parallel, there holding the globe stedy; the *Quarta Altitudo* and marke agreeing in altitude, bring the *Quarta Altitudo* to the second note, if that do also agree with your former obserued alti-

tude, then doth the Globe stand in his true Eleuation ; if not, you must eleuate or depresse the Pole by discretion, vntill you bring the 2 obserued altitudes of the Sunne to agree with the two markes which you made vpon your described parallell, and then is the Pole at its true eleuation ; and what is spoken of the Sunne, the like may be done by any knowne fixed Starre. I hold this conclusion to be very necessary, pleasant, and easie for the Seamans purpose.¹

To find the true place of the Sunne in the Ecliptick at all times.

Because it is most necessarily required in the former practises, that the Sunnes true place in the Ecliptick be at all times knowne, I thinke it not amisse to enforme you how the same may be done.

The chieftest and most certaine meane to know the same is by the tables of the Ephimerides, but, those tables wanting, the Seaman may in this sort doe it : by the Regiment seeke out the declination of the Sunne, that being knowne bring the zenith vpon the Meridian, so many degrees and minutes from the Equator as is the Sunnes declination, there moue the globe vntill some degree of the Ecliptick

¹ These several problems to find the Pole's height or the latitude, by help of the globe and compasses, show great ingenuity,—truly what Carlyle defines as talent—"the capacity for taking trouble". Before the existence of logarithmic tables, these appear to have been the only methods. In these days of chronometers, the compass has ceased to be an instrument used in the determination of geographical positions at sea ; but Davis followed the good old sea adage—"When you can no better do, to an anchor (compass) you must come." All these problems on the globe are given in the early books on navigation, and may be even now worked out with advantage by the student as a means of acquiring a comprehensive grasp of the true principles of spherical trigonometry. See *Robertson's Elements of Navigation*, vol. i, Book VI, Sec. v, p. 346 (London, 1796).

doe come directly vnder the point of the Zenith, for that is the Sunnes place; you must further consider whether it be betweene March and June, for then you must finde the degree in that quarter of the Ecliptick contained betweene ♈ (Aries) and ♋ (Cancer); if it bee betweene June and September, you must finde the degree in that quarter of the Ecliptick contained betweene ♋ (Cancer) and ♎ (Libra), so of the rest.

It may also be knowne vpon the Horizon of the Globe by a Calender Circle that is there described, in this sort: first search the day of your moneth wherein you desire to know the Sunnes declination, and directly against the same degree which standeth for that day, doth also stand the degree of the Zodiac, wherein the Sun is at the same time, in a circle representing the Zodiac, and described vpon the Horizon.

But if it be Leape yeere, you must not take the precise day of the moneth wherein you seeke the Suns place, but the next day following, and against that day seeke the declination.

To find the Poles height by any two knowne fixed starres.

When you see any 2 fixed Starres which you know to bee both at one instant in the Horizon, vpon your Globe searche for those Starres, and bring one of them to touch the Horizon of the Globe, if the other doe not likewise touch the Horizon, you must raise or depresse the Pole by discrete mouing of the Meridian, vntill you bring both those Starres to be at one instant in the Horizon, for then the Globe doth stand to his true eleuation.

To finde the Poles height by any two knowne fixed Stars another way.

When you see any fixed Starre that you know to be in the Horizon, you must presently take the height of some

other Starre, that you likewise know, before the first be risen frō the horizon, then vpon your Globe search for the Star that you obserued in the horizon, bring that star to the horizon of the globe, then holding the globe stedy, bring the *quarta altitudo* to the other Starre, whose altitude you obserued; if it agree vpon the *quarta altitudo* with the obserued altitude, then the Globe doth stand to his true eleuation; if not, you must by discretion rayse or lay the Pole vntill you find the one Starre in the Horizon, and the other vpon his true obserued altitude, for then the Pole doth stand to his true eleuation.

To finde the Poles height at anytime by any 2 knowne fixed Starres.

With your crosse staffe take the distance of any two stars from your Zenith, which must be done with as much expedition as may beo; their distances so known, with a paire of cōpasses, measure so many degrees vpon the Equator, as is the distance of the first obserued Starre; with an other paire of compasses doo the like for the second obserued Starre; vpon the first Starre set one point of the compasses that tooke his distance, and vpon the second Star set likewise one foote of the compasses that tooke his distance; bring the other two feete of the compasses to meete together, there make a marke, for that is the parallell wherein you be, and that mark is the Zenith; bring it to the Meridian by moouing the Globe, and there wil appeare the latitude desired, for so many degrees and minuts as that marke is from the Equator, so much is the Pole eleuated aboue the Horizon. This conclusion the Seaman ought to haue in good esteeme.

To know the precise hower at all times by the Sunne.

For the finding of the hower of the day by the Globe, it is necessary that the Polos height be first knowne; there-

fore set the Pole to his true eleuation, and the zenith to his answerable latitude; then bring the place of the Sunne in the Ecliptick vnder the Meridian, there holding the Globo stedy, place the Index of the *Circulus horarius* vpon 12 of the clock or noone; your Globe thus ordered, then with your Crosse staffe take the Sunnes height from the Horizon; that being knowne, you must bring the place of the Sun to the *quarta altitudo*, by mouing the Globe and *quarta altitudo* vntil the place of the Sunne doe agree with the obserued altitude, there holding the Globe that hee moue not, the Index doth shew vpon the *circulus horarius* the true hower desired.

To find the hower of the night by any knowne fixed Starre.

Set the Globe to his true altitude, and the Zenith to his answerable latitude; you must also place the Index of the *circulus horarius* vpō the houre of 12 or noone, by bringing the Sunnes places vnder the Meridian, etc., as before you did by the Sunne, then take the height of any knowne fixed Starre; bring that Starre to the *quarta altitudo*, by mouing the Globe and *quarta altitudo* vntill the Starre come to his true obserued altitude, there holding the Globe stedie, the Index doth shewe vpon the *circulus horarius* the true time of your obseruation.

To know the length of the daies and nights, at all times, and in all places.

The place and time being giuen wherein you desire to know the length of the day or night, first set the Globe to his altitude for the place, then search the place of the Sunno in the Ecliptick for the time wherein you seeke the daies length, bring that place of the Sunne vnder the Meridian, there holding the Globe that he moue not; place the index of the *circulus horarius* vpon the hower of 12, or noone, then turne the Globe vntill you bring the place of

the Sun to touch the East part of the horizon, there holding the Globe, you shall see by the Index of the *circulus horarius* the true time of the Sunnes rising; then bring the place of the Sunne to the West parte of the Horizon, and you shall there see the true time of the Sunnes setting, wherby the length of the day and night doth most plainly appeare. And this may suffice for the vse of the Globe necessary for the Seamans purpose.

I might here recite the triple rising and setting of the Starres, Cosmice,¹ Acronyce,² and Heliaco,³ the ascensions right and oblique, the dawning and twilight, howers equall and vnequall, ordenary and planetary, daies naturall and artificiall, the triple rising of the Sunne Equinoctiall and Solsticiall, Circles of position with their vse and nature, the horoscope and domifying⁴ distinctions of the heaucens, the planets, their motions, retrogradiatōs and excentricitie of their orbs, borologie, and many other most pleasant conclusions; but because they doe in no sort appertaine to the Seamans vse, I therefore omit them, as matters more troublesome then profitable for him, expecting from some learned Mathematician a worke of worthy esteeme, wherein these and many other excellent conclusions shall by cunning demōstration be made knowne vnto vs.

Of the Crosse staffe and his demonstration.

The Crosse staffe⁵ is an artificiall instrument, geometri-

¹ Cosmical—rising or setting with the sun.

² Acronycal—rising at sunset, and setting at sunrise.

³ Heliacal—emerging from, or passing into, the light of the sun.

⁴ Domifying, an astrological term meaning dividing or housing the heavens.

⁵ The Cross Staff was first described by Werner (see Appendix A.), and next by Cortes and Medina. There were many forms of it, one invented by Gemma Frisius, another by Wagenaar, another by Hood. They are described, in detail, by Blundeville in his *Art of Navigation*, pages 666 to 672. The cross staff of Gemma Frisius was too long for use on board ship. That of Coignet was three to four feet long.

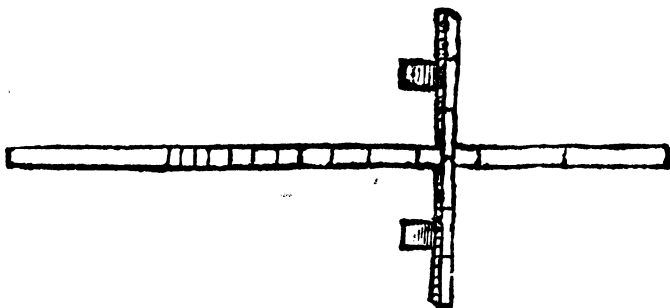
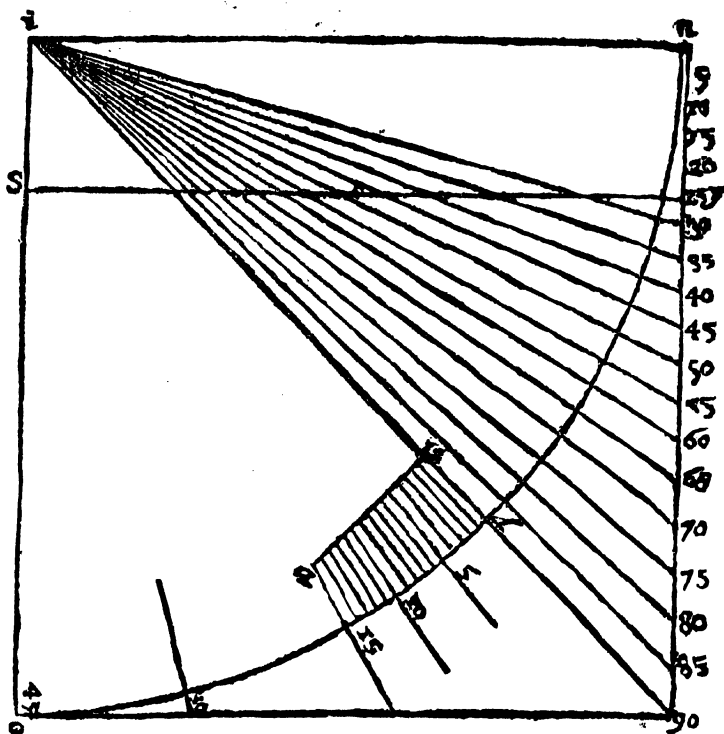
cally projected into that forme as an instrument of greatest ease and exactest vse in Nauigation, by which in any naturall disturbance of wether (the Sun or Stars appearing) the Poles height may be knowne, when the Astrolabje or quadrant are not to be vsed. Conueying the vse of the quadrant from the beame of the Sunne to the beame of the eye, for whereas by the quadrant the sun beame perceiuing the Dioptra sheweth his height, so by the crosse staffe the beame of the eye conueyed to the Sunne or Starre, doth likewise giue their height. The demonstration whereof is thus:

Make a plaine square consisting of 4 right angles, as is the square, I, o, d, n ; the angle I shal be assigned the Center of the quadrant, where placing one foote of your Compasses, stretch the other foote to the angle n , and therewith describe a quarter of a circle, as is the arke o, d, n ; then from the center I to his opposite angle h , drawe a right line, by which line the quadrant o, d, n , is diuided into 2 equall partes; in the point d deuide the arke d, n , into 90 equall partes, drawing from the center I lines through euery of those diuisions touching in the line n, h , as by this figure appeareth; then consider the length of your transuersary,¹ and take halfe thereof, laying it vpon the line I, o , in the point S ; from that point S drawe a parallell to the line I, n , as is the line S, y ; and as that line doth intersect the diuisions of the halfe quadrant, so shalbe the degrees of the crosse staffe, and note that the sides of the square must be as long as the staffe that is graduated.

Because the staffe should be of vnreasonable length to contain more then 60 degrees, therefore to keepe him in due forme for the ease of his vse, and that the complement of 90 degrees should be contained vpon the staffe, the

¹ The transversary is the cross-piece. It is also called a transome. On the cross staff described by Michel Coignet, there were three transversaries of different lengths.

other 30 are artificially projected vpon the trauersary as by this demonstration appeareth, & in this sort consider the length of your staffe from that point *S* to the last inter-



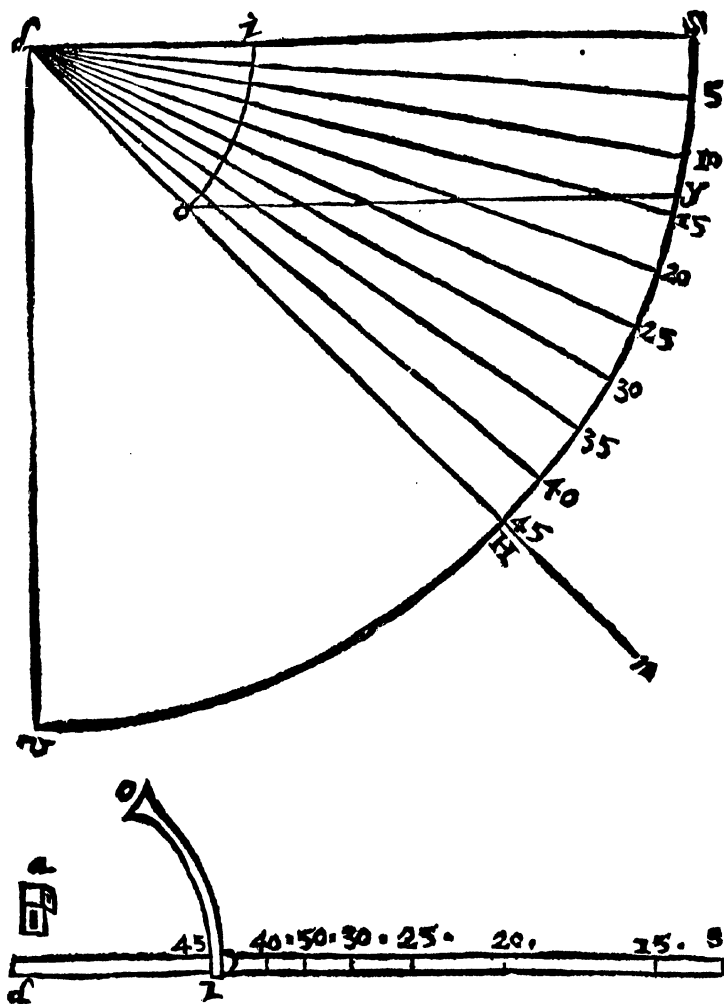
section which endeth in 30 degrees, lay downe the length of the line I, h , at the point of v ; from that point drawe a right line, cutting the line I, h , to right angles, as is the line v, a , being iust the length of halfe the transuersary; then deuide the arke o, d , into 45 equall partes, accompting from the point d to the point o ; then from the angle I , drawe right lines to the first 15 of those partes, and as those lines doe cut the lyne v, a , so must the transuersary be graduated on both his partes, whereunto vanes being framed, your staffe is finished to your vse.

There is a staffe of another proiection, which I find by practise to be an instrument of very great ease and certaintie at the Sea, the Sun not being more then 45 degrees about the Horizon, whose vse is contrarie to the other before demonstrated; for by this staffe the beame of the Sunne shadowing vpon the transuersary, doth thereby giue the height most precisely, not regarding how to place the center of the staffe to the eye, for the correction of the parrallar of the sight, and without looking vpon the Sun, whose demonstration is thus:

Drawe 2 right lines, cutting each other at right angles, as doe the lines d, v , and d, s ; vpon the angle d , describe a quarter circle, as is the arke v, s , deuide that quadrant into 2 equall partes by the line d, n , cutting the quadrant into the point h , deuide the arke s, h , into 45 equall partes or degrees, drawing lines from the center d to euery of those diuisions; then from the point I , bring the third part of the line d, s , vpon the center d , describe an ark of a circle, as is the arke I, o , which is for the transuersary of this staffe, and the line d, s , is for the staffe; then from the point o , where the vpper end of the transuersary toucheth the line d, n , drawe a parallell to the line d, s , as is the line o, y ; and as that line doth cut the lines drawne from the center d , so must the staffe d, s , be graduated, laying it vpon the line o, y , putting that part of the staffe wher the

point *I* toucheth vpon the point *o*, and then from the point *I*, lay downe the degrees, as are the intersections vpon the line *o, y*, and so is the staffe graduated.

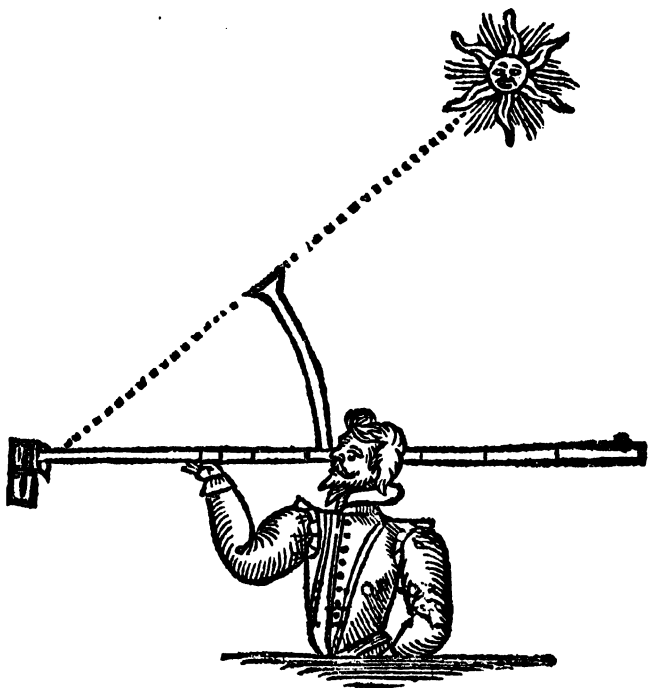
The transuersary at the point *i* must haue an artificiall



hole made for the staffe to runne in, as other staues haue, also there must bee a plate of brass with a soccat to be set to the cēter of the staffe, as is the figure *a*, in the midst wherof there must be a slitte, through which the sight must be conueied to the Horizon, and this plate must receiue the shadowe of the transuersary, and so the staffe is finished.

How is the vse of this Staffe?

The vse of this staffe is altogether contrary to the other, for the center of this staffe, where the brass plate is fastened,



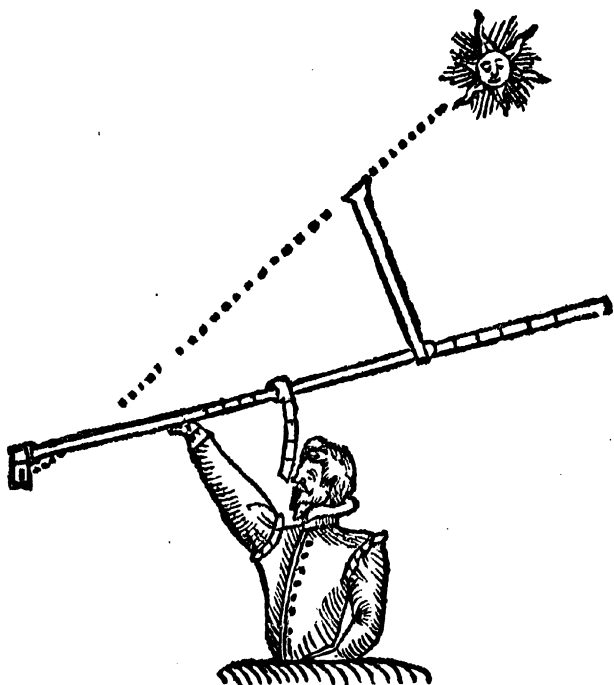
must be turned to that part of the Horizon which is from the Sunne, and with your backe toward the Sunne, by the lower edge of the halfe crosse, and through the slitte of the

plate you must direct your sight onely to the Horizon, and then moouing the transuersary as occasion requireth, vntill the shadow of your vpper edge of the transuersary doe fall directly vpon the said slitte or long hole, and also at the same instant you see the Horizon through the slitte, and then the transuersary sheweth the height desired.

Finding by practise the excellencie of the Crosse Staffe aboue all other instruments to satisfie the Seamans expectation, and also knowing that those instruments whose degrees are of largest capacitie are instruments of most certaintie. I haue verry carefully laboured to search a good and demonstrable meane how a crosse staffe might be proiected, not onely to containe large degrees, but also to auoide the vncertaintie of the sight, by disorderly placing of the staffe to the eye, which demonstration I haue found, and haue had the instrument in practise, as well vnder the Sun as in other climates, but because it hath a large demonstration with manifold vses I heere omit to manifest the same, purposing to write a particular treatise¹ thereof, notwithstanding his forme and vse, by picture I haue thought good to expresse. This staffe is a yard long, hauing two halfe crosses, the one circular, the other straight, the longest not 14 inches, yet this staffe doth contain the whole 90 degrees, the shortest degree being an inch and $\frac{3}{4}$ long, wherein the minuts are particularly and very sensibly laid down, by which staffe, not regarding the parallar of your sight, nor looking vpon the Sunne, but onely vpon the Horizon, the Sunnes height is most precisely known, as well and as easily in the Zenith as in any other part of the heauen. Then which instrument (in my opinion) the Seaman shall not finde any so good, and in all climates of so great certaintie, the inuention and demonstration whereof I may boldly chalenge to appertaine

¹ This treatise was never printed. Davis seems to haue been much hurried in writing the latter part of the *Seaman's Secrets*. He was probably about to go to sea again.

vnto my selfe (as a portion of the talent which God hath bestowed vpon me) I hope without abuse or offence to any.¹

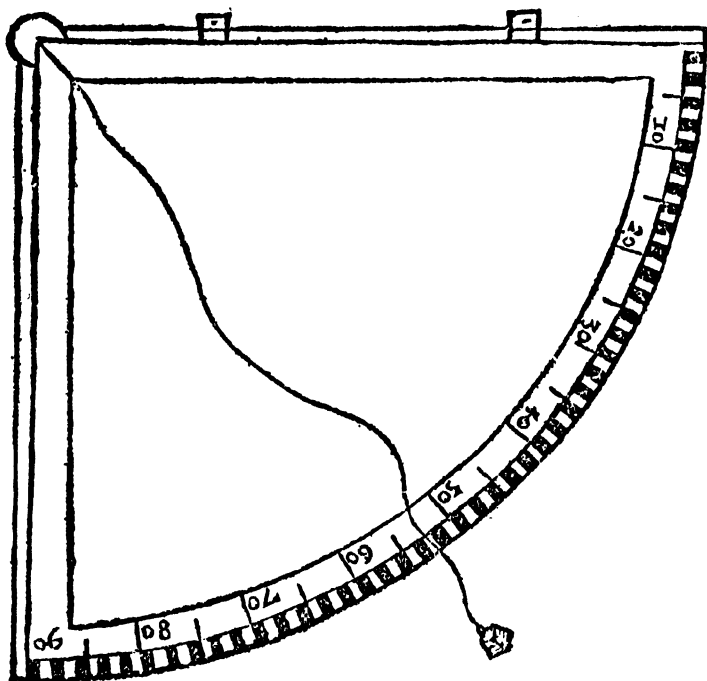


Of the Quadrant.

A Quadrant is the fourth part of a circle, containing 90 degrees, and representeth the distance between the Horizon and Zenith, being an excellent instrument vpon the shore, to perfourme any Astronomical obseruations, but for a Seaman it is to no purpose: and although there may be very much written of the commodious and excellent vses of the Quadrant, yet not being an apt instrument for Sea obseruations, it shall be from my purpose to write further thereof,

¹ The back staff, invented by Davis, was the forerunner of Davis's quadrant, called by the French "Quartier Anglais".

and therefore the onely laying downe of his forme may at this present suffice.

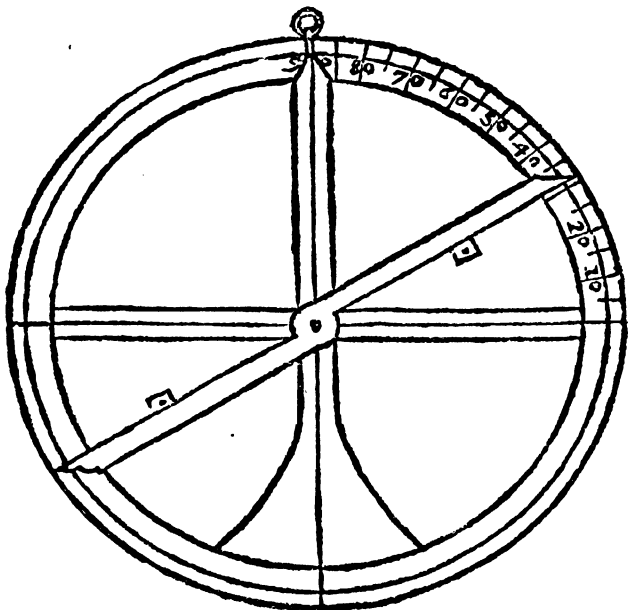


Of the Astrolabie.

An Astrolabie is the representation of a great circle containing foure quadrants, or 360 degrees, which instrument hath bene in long vse among Seamen, and is an excellent instrument being rightly vnderstoode and ordered, but sith the vulgare Astrolabie w(ith) his vse is to euery Seaman sufficiently knowne, it should be vaine labour for me to lay downe his vse and demonstration; therefore by his fourme it shall suffice to expresse him.¹

¹ There have been many treatises on the astrolabe, most of which are referred to in Appendix A.

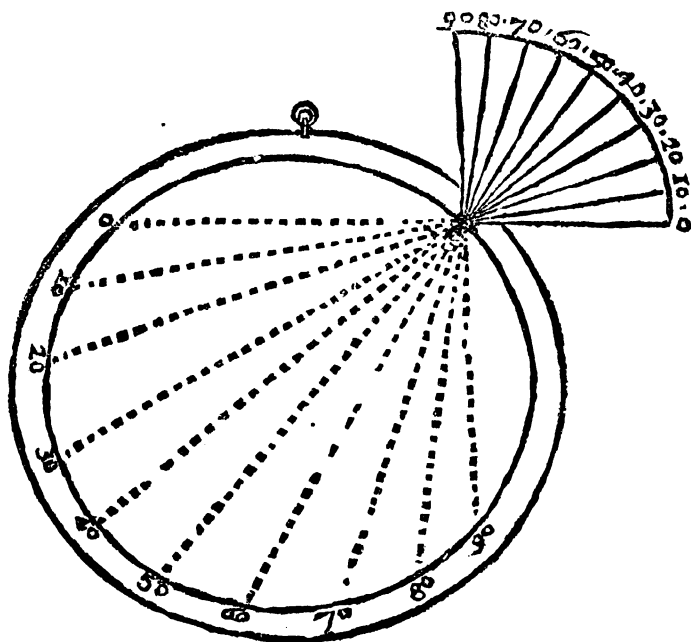
There hath been great paines taken by many for the enlarging of the degrees contained in the Astrolabie, among which there is a proiection to conuey the degrees of a quadrant into the concauity of an Astrolabie, where by these degrees shall be double to any other Astrolabie of



the same quantitie, so that the Sunne beame pearcing a hole made in the side of the Astrolabie is thereby caried to the degree noted in the opposite concaue part, as by his forme may appeare.

Also my selfe labouring in the same matter, haue found a meane wherby an Arke of a quadrant, whose side is 10 foote, may be conueied into an Astrolabie 10 inches diameter, whose dioptra shall cut his lymbe to right angles, and shall perfourme the complement of 90 degrees as amply and as effectually as by the quadrant it may in any sort be done.

Whose demonstration, together with the demonstration of my Staffe, I purpose, God willing, at large to manifest. But there can be no inuention that can establish the certainty of the vse of either Quadrant or Astrolabie at the Sea, for vnlesse it be in very smoothe water, there can be no certainty of any obseruation by those instruments wherby the Seaman may rest assured of the la(titude) which he seeketh, but the obseruations made by the crosse staffe are without all distrust of error, and therefore no instrument may compare with the excellencie of this crosse staffe for the Seamans vse.



FINIS.

Imprinted at London by Thomas Dawson, dwelling
neere the three Cranes in the Vinetree,
1607

APPENDIX A.

AN ENUMERATION OF THE WORKS ON THE ART OF NAVIGATION

PREVIOUS TO AND DURING THE AGE OF ELIZABETH.

THE following enumeration of works on navigation previous to and during the Elizabethan age is intended, first, to show the position taken by the *Seaman's Secrets* of Davis, and, in the second place, to furnish a key to the history of the progress of nautical science. England, when her sons first began to undertake voyages of discovery, was obliged to look to other more advanced countries for the needful knowledge. The first works enumerated in this list are little more than paraphrases of Ptolemy. Muller (or Regiomontanus) began to take independent observations, and soon the Spaniards and Portuguese produced works for the use of mariners. The English were at first dependent on translations of Spanish books, but discoveries and improvements in the art of navigation followed rapidly on the first voyages of discovery, and all through the reign of Elizabeth books with new inventions or improved methods continued to supply an ever-increasing demand. When a good work on navigation was published, edition followed edition in rapid succession. The List is an attempt to enumerate the principal Spanish and other foreign publications, and all the English works on the art of navigation belonging to the age of Elizabeth.

The arrangement of the list is chronological as regards

authors, but all editions are enumerated together. At the end there is an alphabetical list of authors for more ready reference.

WORKS BEFORE OR SOON AFTER THE VOYAGES OF COLUMBUS.

SACROBOSCO (JOHN HOLYWOOD) "De Sphæra mundi".¹—This was once the universal text-book in all schools of navigation, especially in Spain and Portugal. There were editions in 1472 (Ferrara), 1478 (Venice), 1480 (Bologna), 1482 (Venice), 1485 and 1488 (Vienna), 1494 (Paris), 1498 (Paris), 1508 (Cologne), 1526 (Avignon), 1527 (Paris), 1537 (Venice), 1538 and 1543 (Cologne). In 1545 a new Spanish edition appeared at Seville in 4to., "J. Sacrobusto. Tractado de la Sphera con muchas addiciones agora nuevamente traduzido de Latin en lingua Castellana por el Bachiller Hieronymo de Chaves." Hakluyt mentions CHAVES as having been one of the examiners in navigation at Seville (*Dedication to Principal Navigations*, 1598). Then followed other Italian editions—Venice (1554 and 1576), Florence (1579), and Paris (1577).

Sacrobosco was an English mathematician of the 13th century, contemporary with Roger Bacon. He is said to have been a Yorkshireman from Halifax. He was admitted a member of the University of Paris in 1221, where he spent most of his life, but he resided for some years at

¹ There were Englishmen who wrote on astronomical subjects even before the time of Sacrobosco. In the first half of the twelfth century, Athelard or Adelard, a Monk of Bath, wrote on the astrolabe. He had travelled in the East, and returned about 1130. See Hakluyt, *Prin. Nav.*, p. 5. In the twelfth century, Alexander Neckam, Monk and Schoolmaster of St. Albans, was undoubtedly the first writer in the west who mentioned the compass in his "De Utensilibus". This fact was brought to light by M. d'Avezac (*Bulletin de la Soc. de Geog. de Paris*). Roger Bacon mentioned the load-stone in his "Opus Majus" and "De Cosmographia".

Oxford. He died at Paris in 1256. The “*De sphæra mundi*” is a paraphrased translation of part of Ptolemy’s *Almagest*. It was first printed in 1472; and passed through more than twenty editions.

THE ALPHONSINE TABLES.—An astronomical work which appeared in 1252, under the patronage of Alfonso X, King of Castille. The Tables contain the places of the fixed stars, and the methods and tables then in use for computing the places of the planets. But the Tables were not made from original observations. They were constructed for the meridian of Toledo, and the year 1256. They formed, except in a few points, a body of Ptolemaean astronomy, and continued to be used for several centuries. First printed at Venice in 1483, again in 1488, 1492, 1517, 1521, 1545, and 1553.

JOHN PECKHAM, a native of Sussex, a Franciscan, afterwards Archbishop of Canterbury, A.D. 1279-1292, wrote a treatise called “*De Sphæri*.”

GEOFFREY CHAUCER, the Poet, wrote a treatise on the Astrolabe, addressed to his son Lowis, in 1391. It is plain, from what is said at the beginning of this treatise, that the printed copies do not contain more than two of the five parts of which it was intended to consist. The title is “*Tractatus de Conclusionibus Astrolabii*.” Underneath, [“*Bred and Mylk for Children*”], and it is addressed to his son “*Litell Lowys*”. Chaucer obtained his materials from the Latin translation of the treatise of the Jew “*Má shea Allah Al Misri*” (*Messahala*¹) entitled “*Compositio et Operatio Astrolabii*”. Chaucer’s Treatise was first printed in 1532 (folio), then followed editions in 1542, 1551, 1561, 1598, 1602, 1687, 1721. Mr. A. C. Brae published an edi-

¹ Or Maschalla. He was a learned Jew at the Court of the Khalifas from the time of Almanzor to that of Almanun, A.D. 754 to 813. See an account of his works in *Casiri*, p. 434. His treatise on the astrolabe, translated into Latin, was printed at Venice, in 1493.

tion in 1870, and the Rev. W. W. Skeat, for the Chaucer Society, in 1872.

ROBERTUS ANGLICUS (seu De Cestria).—According to Leland he flourished in 1390. “De Astrolabio Canones Incipiunt.” (Perugia, 1476, 4to., 42 leaves.) Edited by U. Lunciorinus.

NICHOLAS DE LYNNE was a Franciscan Friar, and an excellent mathematician of Oxford, who made a remarkable Arctic voyage in 1364. See Hakluyt’s *Principal Navigations*, p. 248. I have referred to this voyage in my *Northward Ho!* p. 10. Nicholas wrote several treatises of more or less value to navigators in those days, namely, “De Natura zodiaci”, “De Planetarum Domibus”, “De Mundi Revolutione”, and “De usu Astrolabii”.

WILLIAM BATCOMBE was Professor of Mathematics at Oxford in the reign of Henry V. He wrote “De Sphæra Concava”, “De Fabrica et usu ejusdem”, and “De Operatione Astrolabii”.

GEORGE PURBACH was born near Linz in 1423, and became Professor of Astronomy at Vienna, where he constructed many astronomical instruments. In his days the Greek manuscript of Ptolemy was unknown, and there only existed two Latin versions of the *Almagest* translated from the Arabic, besides the treatise on the sphere by Sacrobosco. Purbach wrote on the theory of the planets, *Theoriæ Novæ Planetarum* (Venice, 1488), *Tabulæ Eclipsium* (Vienna, 1514), and commenced the translation of Ptolemy. He died at Vienna in 1461.

JOHANN MÜLLER or REGIOMONTANUS was born at Königsberg in Franconia in 1436, and was the pupil of Purbach, whom he succeeded as Professor of Astronomy at Vienna. In 1461 he went to Rome to study Greek, and thence to Ferrara and Padua. In 1465 he returned to Vienna. While in Italy he wrote “De Triangulis Planis et Sphæricis” (Nürnberg, 1533, fol.), containing two tables of natural

sines. He also completed Purbach's translation of Ptolemy's *Almagest*, the first edition appearing at Venice in 1496 (folio), the second at Basle in 1543. Removing to Nuremberg in 1471, he was assisted by a wealthy citizen named Walter, in constructing several astronomical instruments. With their aid he drew up Tables which were first published in 1544, and exposed the errors of the Alphonsine Tables. He also published the first almanac "*Calendarium Novum*", for years 1475 to 1566. He died at Rome in 1475.

MARTIN BEHAIM was born at Nuremberg in 1436, and was a pupil of Regiomontanus. He was a merchant, and in 1479 went from Antwerp to Portugal, being a skilful cosmographer and constructor of maps. In 1484 he accompanied Diogo Cam on his voyage of discovery, when that explorer reached the mouth of the Congo. He afterwards married at Fayal, one of the Azores, and resided there, and was employed in making charts, occasionally visiting Lisbon and Madeira. He died at Lisbon in 1506; leaving no work behind but a famous globe, and many charts and maps. The globe is preserved at Nuremberg. Martin Behaim invented the application of the astrolabe to purposes of navigation in 1480.

JOHN WERNER, of Nuremberg, was born in 1468. A great mathematician. He wrote five books on trigonometry; and in 1522 he published his "*Opera Mathematica*". Werner was the first author who described the cross-staff and its use; in his Annotations on the first book of Ptolemy's Geography, printed in 1514. He died in 1528.

JOANNES STOEFLERIUS was Professor of Mathematics at Tubingen. He was the author of Ephemerides for the years 1494 to 1551, and of a work entitled "*De fabrica et usu Astrolabii*". He died in 1531, aged 78.

SEBASTIAN MUNSTER was born at Ingelheim in 1489. He was the pupil of STOEFLER at Tubingen, and afterwards taught Hebrew and theology at Basle, where he died of the

plague in 1552. His chief geographical works were a new edition of the Latin version of Ptolemy (1540, fol.) "Sphæra Mundi et Arithmetica" (Basle, 1546, 4to.), and the "Cosmographia Universalis" (Basle, 1550, folio), in German, which went through several editions. (See EDEN and BELFOREST.) Munster was called the "German Strabo".

PETRUE APPIANUS, of Leipsic, Professor of Mathematics at Ingolstadt, 1524. Author of a great work on cosmography. See GEMMA FRISIUS.

ANGEIAS.—Published astronomical almanacs or ephemerides from 1494 to 1500.

SPANISH AND PORTUGUESE.

ALONZO SANCHEZ DE HUELVA.—Andaluz. "Compendio del Arto de Navegar", 1484. This is the first book mentioned by Stratico (*Bib. Mar.* Milano, 1823, 4to.) Alonzo Sanchez is the pilot who was supposed to have discovered America before Columbus. See note at p. 24 of the first volume of *G. de la Vega* (Hakluyt Society's Series, 1869.)

PEDRO NUNEZ, or NONIUS, was born at Alcazar, in Portugal, in 1497. He wrote "Sol e da Lua, pello Doutor Pero Nunes, Cosmographo del Rey dõ Joaõ ho tercyro: Empri-mir cidade de Lisboa per Germao Gallharde emprimidor: primeiro dia do mes de Dezembro, 1537" (fol.) In 1567 a Latin edition was published at Basle with the addition of a second book, the whole entitled "De Arte et Ratione Navigandi" (1530). Nunez, the first of the Portuguese cosmographers, exposed the errors of the plane chart, and gave the solution of several astronomical problems, including the determination of the latitude by sun's double altitude. A complete edition of the Latin treatises of Nunez was published at Coimbra in 1573. His treatise on Algebra, in

Spanish, was printed at Antwerp in 1567. Nunez was Professor of Mathematics at Coimbra. He died in 1577, aged 80.

MARTIN FERNANDEZ ENCISO.—“*Suma de Goografia que trata de todas las partidas y provincias del mundo en especial de las Indias, y trata largamente del arte del marear juntamente con la esphera en romance, y con el regimiento del sol y del norte.*” 1st edition, Seville, 1519 (fol.), 2nd edition, Seville, 1530. “Agora nuevamente emendada de algunos defectos que tenia en la impresion passada.” Bound up with CORTES. A third edition, 1546.

The work consists of definitions, tables of declination, and a description of the countries of the world. The Bachiller Enciso was the partner of Alonzo de Ojeda, and afterwards went out to the Darien Isthmus in the expedition of Pedrarias, as Alguazil Mayor of the province of Castilla del Oro. See *Travels of Cieza de Leon*, p. 34, note, and *Narrative of Andagoya*, pp. ii, and 2, note, the Hakluyt Society's volumes for 1864 and 1865. The “*Suma de Geografia*” may be considered as the first navigation book.

Enciso says of England that there is no wine or oil, by reason of the moist and cold climate, but that the people get wine from Spain. They make beer from barley and wheat, as in Flanders, which they use as wine. The people are well made, red and white complexions, warlike, quarrelsome, and cruel. In England there are trees, the leaves of which, when they fall on the water, turn into fish, when on land, into birds. This is the land whence came the tales of King Arthur and the Table Round, and of the divinations of Merlin. Of the Dutch he gives a better character. He says they are loyal and valiant, of good conversation, quiet and peaceful among themselves. Their country is damp, and with good pasture lands.

ANTONIO DE GUEVARA.—A Franciscan monk of good family from Alaya, Bishop of Mondonedo. His works were first

published at Valladolid in 1539 (folio). At Antwerp in 1550 appeared "Libros de los inventores del arte de marcar y de muchos trabajos que se passan en las galeras." Another edition at Pampluna, 1579 (8vo.) The English translation was printed in 1578: "A booke of the Invention of Navigation, and of the great travelles which they do passe which sail in gallies: compiled by the famous Sir Anthonie of Guevara, Bishop of Mondonnedo, Preacher, Chronicler, and Counsellor unto the Emperor Charles the Fift. Translated by EDWARD HELLOWES. Imprinted at London for Ralph Newberrie, dwelling in Fleete Streete, a little above the Conduit, Anno 1578." 8vo., 27 leaves. (*Arber*, ii, p. 303.) There is a copy in the Pepys Library at Cambridge (*Sea Tracts*, vol. i.) Guevara also wrote many religious works. He died in 1544.

ALONSO DE CHAVES.—"Relacion de la Orden que observaba en el examen y admision de pilotos y maestros de la carrera de Indias", 1561. A manuscript never published, at Simancas. See *Navarrete Bibliotheca Maritima Española* (Madrid, 1857), i, p. 17. See also *Herrera*, Dec. iii, p. 219, and iv, p. 30.

RODRIGO ZAMORANO was Cosmographer to the Council of the Indies at Seville. He wrote "Carta de marear" (Seville, 1588); "Los seis libros primeros de Euclides traducidos en lengua Española" (Seville, 1576, 4to.) "Cosmografia. Compendio del arte de Navegar" (Seville, 1586, 4to.) Other editions in 1588 and 1591. Translated into Dutch, in 1598, by EVERART.

GERONIMO DE CHAVES.—"Tratado de la Esfera que compuso el Doctor Juan de Sacrobusto con muchas adiciones traducido con escolios y figuras" (*Hispali*, 1545, 4to. "Chronologia ó Repertorio de los Tiempos" (Seville, 1554, 1574, 1580). He was also the author of a map of Seville and its territory, which was used by Ortelius in his "Theatrum Orbis Terrarum". Geronimo de Chaves is

mentioned by Hakluyt in his dedication. (See SACRO-BOSCO.)

Hakluyt, in his dedication to the Lord High Admiral, in advocating the establishment of lectures on navigation in London, says that Charles V not only appointed a Pilot Major for the examination of such as sought to take charge of ships in the voyage to the Indies, but also founded a notable lecture of the art of navigation in the "Casa de Contratacion" at Seville. He adds that the learned works on this subject, of Alonzo and Geronimo de Chaves and Rodrigo Zamorano, had come long ago to his hands. Hakluyt's dedication is dated 7 Oct. 1598.

The course of instruction which was ordered to be given to pilots and other sea officers at Seville was laid down in the *Ordenanzas del Consejo Real de las Indias*, printed in 1636. It included the "De Sphæra Mundi" of SACRO-BOSCO, the ALPHONSINE TABLES, the theory of the planets of PURBACH, and the book of triangles by REGIOMONTANUS; together with the use of instruments, and the art of navigation.

MARTIN CORTES.—"Breve compendio de la sphaera y de la arte de navegar, con nuevos instrumentos y reglas exemplificado con muy subtiles demonstraciones, compuesto por Martin Cortes, natural de Burjalaros en el regno de Aragon y de presente vezino de la ciudad de Cadiz; dirigido al invictissimo monarcha Carlo Quinto, Rey de las Hespañas, etc.: Señor Nuestro" (Seville, 1551).

This work opens with a dedicatory letter to Charles V, followed by a prologue addressed to Don Alvaro de Bazan, Captain General of the Royal Fleet. Then follow chapters containing the usual definitions, and a table of the minutes in a degree of longitude on each parallel of latitude. The second part describes the motions of sun and moon, divisions of time, the machinery and use of clocks, and the tides. There is also a chapter on the St. Elmo lights. The

third part describes the several winds, the construction and use of plane charts, of the compass, the astrolabe, and cross staff. Cortes was the first to suggest a magnetic pole, different from the pole of the earth.

The second edition of Cortes appeared at Seville in 1556 (95 leaves, folio).

The work was translated into English by RICHARD EDEN in 1561, at the suggestion of the famous Arctic navigator and pilot, STEPHEN BURROUGH, and dedicated to the Company of Merchant Adventurers for the discovery of lands unknown, who paid the expenses. Eden gives a preface of 13 pages. Other editions of the English translation of Cortes appeared in 1584, 1588, 1589, 1600, 1609, and 1615. In the edition of 1600 the title is "The Art of Navigation, by Martin Curtis".

PEDRO DE MEDINA.—"Arte de Navegar" (Valladolid, 1545, folio). The next edition was published at Venice in 1554 (4to). Then "Regimiento de Navegacion contiene las cosas que los pilotos han de saber para bien navegar" (Seville, 1563, 4to). Next there were two Lyons editions, in 1569 and 1576, and one at Rouen in 1579. The English edition was published in London in 1581, in folio, "The Arte of Navigation, by Pedro de Medina, translated out of Spanish by JOHN FRAMPTON". The first Dutch edition was printed at Antwerp in 1580. This was followed by another Dutch edition, translated by MARTEN EVERAERT BRUG, and printed at Amsterdam in 1598. The Dutch edition of 1580 is very interesting, because a copy, in quarto, was found at the winter quarters of Barents. There is a copy in the British Museum. The treatise of MICHEL COIGNET is bound up with it.

Medina was born at Seville. Besides his works on navigation, he wrote a short chronicle of Spain, and a chronicle of the Dukes of Medina Sidonia. He also wrote a "Tabula

Hispaniæ Geographica", which was used by Ortélius in his "*Theatrum Orbis Terrarum*".

ITALIAN.

PORTOLANO.—"Questa o una Opera necessaria a tutti li naviganti chi vano in diverse parte del mundo.. Venetia por Bernardino Rizo da Novaria" (1490, 4to. Second edition, 1528, 8vo.)

MICH. ANG. BLONDUS.—"De Ventis et Navigatione Libellus" (Venice, 1546, 4to.)

GIOVANNI BAPTISTA RAMUSIO.—"Navigationi i Viaggi", in three volumes, the first published in 1550, second in 1559, and third in 1556. Ramusio was born at Trevigi in 1485. He was Secretary to the Council of Ten at Venice, and afterwards retired to Padua, where he died in 1557.

CAMILLO AGRIPPA.—"Nuovo inventione sopra il modo di Navigare" (Rome, 1595, 4to.)

APPOL CALDERINI—"Modo di usare il bossolo" (Milan, 1598, 8vo.)

DUTCH, FLEMISH, AND GERMAN.

REINERUS GEMMA FRISIUS was born at Dokkum in Friesland, in 1508, and studied at Groningen and Louvain. He devoted himself to the study of geography, and also constructed instruments and understood the art of engraving. He died at Louvain in 1555. He wrote "*Arithmeticæ practicæ methodus facilis*" (Antwerp, 1540). He invented a new cross staff, which he described in a work called "*De radio astronomico et geometrico liber*" (Antwerp, 1545). In 1548 appeared his "*De annuli astronomici usu*", and "*De principiis astronomiæ, et cosmographiæ*". In 1556 "*De astralobio catholico et usu ejusdem*", which was brought out by his son Cornelius Gemma. "*Charta sive mappa mundi, qua continetur totius orbis descriptio.*"

"*Cosmographia Petri Apiani*" (Antwerp, 1550). The new edition of Appianus and Gemma was produced at Antwerp, by Joannes Bellerus, in 1584 (4to.) Cornelius Gemma, the son, was born at Louvain in 1535, and followed the same career. He died in 1579.

GERARD MERCATOR, or GERHARD KAUFFMANN, was born at Rupelmonde on March 5th, 1512; and studied first at Bois le Duc, afterwards at Louvain. He studied mathematics with the aid of Gemma Frisius; and in 1541 presented to Cardinal Granvelle his terrestrial globe. This globe was often repeated and much used. Yet only two examples of it are known to exist, one in the Royal Library at Brussels, and the other at Vienna. He published many maps, and in 1569 he completed his chart of the world, on the projection which bears his name. He did not, however, disclose the principle of the projection, which was discovered and first described by EDWARD WRIGHT. Mercator published "*De usu annuli astronomici*" (Louvain, 1552), and "*Tabulæ Geographicae ad mentem Ptolemæi restitutæ et emendatæ*" (Cologne, 1578, fol.). He died and was buried at Duisburg in 1594, aged 82.

ABRAHAM ORTELIUS belonged to a family of Augsburg. His grandfather, William Ortelius, came to Antwerp, and there Abraham was born in 1527. He was wealthy, and able to carry out his literary designs. In his youth he travelled into Italy, and visited England with his cousin Emanuel de Meteren, the historian. He conceived the idea of uniting all the best maps by different authors, in one atlas. The result was his famous "*Theatrum Orbis Terrarum*" (Antwerp, 1570, folio), the base of all subsequent geographical studies. He also published "*Synonymia geographica*" (Antwerp, 1578), and "*Thesaurus geographicus*" (1596). Ortelius was a friend of Mercator. He died on June 28th, 1598, aged 71.

MARTIN EVERART BRUG.—*Ephemerides* from 1590 to

1618. (Printed at Leyden, 1597, 4to.) Translator of MEDINA in 1598, and ZAMORANO in the same year.

JOHANNES STADIUS.—Author of Ephemerides or Almanacs during a series of years, from 1554 to 1576. See page 270 (*note*). (*Cologne*, 1560, 4to.)

DAVID ORIGANUS.—Author of Ephemerides for years 1595 to 1650 (*Frankfort*, 1599, 4to.) His meridian was Wittenberg. Used by Baffin in 1615.

JODOCUS HONDIUS, an engraver, was born in 1546. On the breaking out of war in the Netherlands he went to London, and worked at his business. Here he learnt the true principle of constructing charts on the so-called Mercator's Projection, from Edward Wright. Eventually he returned and settled at Amsterdam, where he published many maps, and brought out new editions of the works of Mercator. He published a globe in 1597, which he announced as containing the discoveries of Frobisher, Davis, Barents, Virginia by Harriott, Guiana by Raleigh, and discoveries in South America and China, described by Texeira. He died in 1611, aged 65.

PETER PLANCIUS was born in 1552. He was a Calvinistic preacher, pastor of the church at Amsterdam, and a member of the Synod of Dordrecht in 1619. But his chief title to fame is his service to geography. He maintained the existence of an open polar sea, and he induced the people of Amsterdam to despatch an expedition to seek a passage north of Novaya Zemlya, under Willem Barents. He also promoted the despatch of subsequent expeditions, and assisted with his advice. He died on May 25th, 1622.

MICHEL COIGNET was a native of Antwerp. He wrote "Nouvelle Instruction des points plus excellents et nécessaires touchant l'art de naviguer" (Antwerp, 1581, 4to.) This treatise is bound up in the Dutch editions of MEDINA; forming a supplement, in which Coignet exposes the mistakes of Medina. He invented a method of sailing

on a parallel of latitude, by means of a ring dial and a 24-hour glass, of which he was very proud. Coignet died in 1623.

ADRIAN GERRITZ, of Haarlem, was an instructor of pilots. After his death was published a work which is now very rare. "Deo zeevaart ende onderwysinge der gantschert oostersche ende westersche zeevaertwater door den vermaerden Pilot ende leermeester der stuerluyden Adriaen Gerritz van Haarlem":—"in which is explained all the secrets of navigation from cape to cape, all courses, makings of landfalls, rivers, harbours, and streams, warnings of shoals and rocks, and how men may pilot to the land, with many beautiful teachings to the profit of all seafaring people" (Cornelisz Claesz at Amsterdam, 1588). Gerritz died in 1580.

NICOLAËS PIETERSZ, of Deventer. Author of a work entitled, "Globe of Cloot:" with problems and demonstrations, 1588.

MATHIJS SYVERTS or SOFRIDUS, of Enckhuysen. Author of a treatise "very necessary for seafaring men", which was translated into English and printed in 1598, by John Wolfe. The title is—"A treatyse very necessarye for all seafaringe men, in the which by waye of conference betwene two Pilotes are many necessarye thinges disclosed; besides the most desired arte of shooting East and Weste, and the observaçons of the sune, by Mathias Sijverts Lakoman *alias* Sofridus".

ADRIAAN VEEN, of Amsterdam, wrote a book called the "Napasser", 1594, on pilotage and navigation.

JACOB FLORISZ VAN LANGEREN, a maker and seller of globes. He had a grant of exclusive privilege to sell one in 1596. He was a rival of Hondius.

GERRIT STEMPELS, of Gouda, a mathematician, published, in 1598, a work entitled "Astrolabium tam generale quam particulare nec non Annulus Astronomicus."

HENRICH JARICHS VAN DER LEY wrote a book which was published at Leeuwarden in 1615. "*Het Gulden Zeeghel des Grooten Zeevaerts*", a navigation book, but of little note.

LUCAS JANSZ WAGENAAR.—"*Spiegel der Zeevaardt van de Navigatie de Westersche Zee.*" (Leyden, 1584, fol.) This was the first marine atlas ever published, and there have been many editions. The English version appeared in 1588. "*The Mariner's Mirrour, together with the rules and instruments of navigation, first made by Luko Wagenaar of Enchuisen, and now fitted with necessario additions by ANTHONY ASHLEY.*" (London, 1588, folio.) This book contains a folio sheet with the arms of Sir Christopher Hatton, to whom the translation is dedicated. The second Dutch edition, with new maps, appeared in 1585 (1 vol., folio), another in 1586. The fourth Dutch edition, with forty-nine charts, is excessively rare. It contains two charts of Ireland and one of Norway, by Willem Barents, with observations on his first two expeditions to the north. This fourth edition was published at Amstordam by Cornelisz Claesz in 1596 (folio). A French edition was published at Antwerp in 1591.

Wagenaar was born at Enckhuysen in about 1550, and served at sea from his boyhood. He was one of the best pilots in Holland. In 1577 he published a chart of the anchorage at Enckhuysen, and others followed in the following years. He had the exclusive right, for ten years, of publishing his sea charts. They were brought together in an atlas called "*Tresoor van de zeevaart*". With it is included a very curious old "*Lees-Caertboeck*" of Wisby. (Leyden, 1592. 4to.) Second edition by Cornelis Claesz, 1596.

SIMON STEVINUS.—On March 8th, 1599, a privilege was granted to Christoffel Raphelingius to print and publish a book by Stevin, called "*De Havenvinding*" (Leyden, 1599).

It was printed in Latin by Grotius, with the title "*Portuum Investigandorum Ratio*". In the same year, EDWARD WRIGHT translated it into English, with the title, "*The Haven Finding Art*". Stevinus raised some objections to the principles laid down in Wright's "*Certain Errors*", to which Wright gave a full answer in his second edition of 1610.

FRENCH.

"*LE ROUTIER DE LA MER iusques au fleuve de jourdain nouvellement imprime a Rouen*". At the end, "*Cy finissent les ingemens de la mer, des nefz, des maistres, des mar-rinners, de tout leur estre avecques le Routier. Imprimé a Rouen pour Jacques le Forestier, demourant au dict lieu devant nostre dame a l'enseigne de la fleur de lis*" (29 fol.) This is the earliest example known to us, from which all succeeding Rutters took their rise. The date is the commencement of the 16th century. The book is very rare, and no example is known in England.

JAN ALFONCE.—"*Voyage aventureux: les tables de la declination du Soleil*" (Poitiers, 4to, 1559).

FRANÇOIS BELFOREST was born in 1530. He edited, with additions, the cosmography of MUNSTER, "*La Cosmographie Universelle de tout le Monde*" (Paris, 1575, 2 vols., folio).

ANDRÉ F. THEVET.—"*Cosmographie du Levant*" (1556). An account of the author's voyage to Constantinople. "*Les singularitez de la France Antarctique autrement nommée Amerique*" (1558). An Italian edition was published at Venice in 1561. "*Cosmographie Universelle*" (Paris, 1572). This was a work of little value, and was never in much esteem. It is only interesting because Frobisher was supplied with it in his northern voyage of 1576.

ENGLISH.

"THE RUTTER OF THE SEA, with the Laws of the Yle of Auleron. Translated and imprinted by Robert Coplande at the costes and charges of Richard Bankes" (London, 1528, 12mo.) This is the earliest known translation of the Routier into English. No copy is known to exist, but it is referred to by Ames (*Typ. Ant.*)

"THE RUTTER OF THE SEA, with the havons, rades, and soundyngs, kennynges, wyndes, floodes, and obbes, daungers and costes of dyvers regions, with the lawes of the Yle of Auleron, and the iudgements of ye sea. Iately translated into Englyshe. Imprinted at London in Poules Chyrche yard, at the sygne of ye Maydens Hed, by me, Thomas Petyt. The yere of our Lorde God M.D.xxxvi. The xxviii daye of Marche." There is a copy in Lincoln's Inn Library.

"THE RUTTER OF THE SEA", title as above, translated by Robert Copland. "With a Rutter of the Northe, compyled by RYCHARDE PROUDE, 1541", added to the same. Rutter, 25 leaves; judgements of the sea, 12 leaves. Rutter of the Northe Parties, 5 leaves" (12mo.) There is a copy in the British Museum, and another in the Pepys Library at Cambridge. A note in the latter, in Mr. Pepys's writing, as follows: "That ye only Fellow to this book I find extant is among Mr. Selden's in ye Bodleian Library at Oxford" (April 1693).

"THE RUTTER OF THE SEA", another edition, printed by William Copland in 1560? (12mo.)

"THE RUTTER OF THE SEA", etc., printed by John Audeley, 1565; another edition in the Pepys Library (No. 44), 1580; another in Arber's list, 1587.

WILLIAM CUNNINGHAM.—"The Cosmographical Glasse, conteyning the pleasant principles of cosmographie, geographie, hydrographie, or navigation." (J. Day, London, 1559, fol.)

RICHARD EDEN was the translator of Cortes and other valuable works. His first translation was "A Treatyse of the New India" from the Latin of SEBASTIAN MUNSTER (London, 1553, 8vo.) Next came P. Martyr's "Decades of the New World", from the Latin (1555, 4to.) His translation of "The Arte of Navigation, containing a compendium description of the sphere, with the making of certain instruments and rules of navigation, by MARTIN CORTES, Englished by Richard Eden": appeared in 1561 in 4to., and was much used. There were editions in 1561, 1578, 1580, 1584, 1588, 1589, 1596, 1600, 1609, and 1615. It was undertaken at the request of Stephen Burrough. There are copies of the 1584 and 1596 editions in the Pepys Library. Then "Decades of Voyages", from the Latin of Kertomannus (1576, 8vo.), and "History of Travayle in the West and East Indies and other countreys, etc., gathered in parte and done into Englisho, by Rd. Eden" (1577, 4to.), edited by Willes. Lastly, "A very Necessary and Profitable Booke concerning Navigation, from the Latin of JOANNES TAISNERIUS" (1579, 4to.), printed by Jugge. In the Pepys Library at Cambridge (*Sea Tracts*, ii, No. 11) there is "A very Necessary and Profitable Book, translated by Richard Eden", on the loadstone.

STEPHEN BURROUGH, to whom Eden's translation of Cortes is due, was born at Northam, in Devonshire, in 1525. He sailed in the expedition of Sir Hugh Willoughby and reached Archangel; and made several subsequent voyages as pilot. See *Hakluyt*, i, p. 274-290. He was afterwards one of the four principal pilots in ordinary of the Queen's Royal Navy, and conducted the fleet, with Leicester's expedition, from Harwich to Flushing in 1585. His interesting account of this service has been printed by the Camden Society in the volume of Leicester's Correspondence. He died on July 12th, 1586, and was buried in Chatham Church, aged 60.

THOMAS DIGGES.—The great mathematician. (See note at p. 234.)

WILLIAM BOURNE.—“A Regiment of the Sea, conteyning most profitable rules, mathematicall experiences, and perfect knowledge of navigation, by William Bourne. Imprinted at London, nigh unto the three cranes, in the Vinetree, by Thomas Dawson and Thomas Gardyner for John Wight.” 1573. Second edition 1577. A large engraving of a full-rigged ship on the title page. A third edition in 1592, corrected by T. Hood. In 1596 a new edition, with this title: “A Regiment for the Sea, containing verie necessarie matters for all sorts of men and travaillers, wherunto is added an hidrographicall discourse touching the five severall passages into Cathay, written by William Borne, newly corrected and amended by Thomas Hood, D. in Phisicke, who hath added a new Regiment and Table of declination. Whereunto is also adjoynd the Mariner’s Guide, with a perfect sea carde, by the said Thomas Hood.” (London: T. Este, for Thomas Wight, 1596.) This edition also has the large ship on the title page. Other editions by Hood in 1611 and 1628.

Bourne was the first to describe the log and line for estimating the rate of a ship. Their use is next mentioned by Purchas in the narrative of one of the early East India voyages. The “Regiment of the Sea” was designed as a supplement to CORTES, whom Bourne often quotes. Bourne published an almanac in 1571 for the years 1571, 1572, and 1573, and in 1580 an almanac for ten years.

Bourne also wrote “Inventions and Devices. Very necessary for all generalles and captaines or leaders of men, as well by sea as by land.” (London, 1578. 4to. 99 pages.) The first part treats of “Martiall affayres by sea.” In the same year appeared his “Booke called Treasure for Travcilers, divided into five bookes or partes, contayning very necessary matters for all sortes of travaillers, eyther by sea or by lande.” The fourth book treats of “the Arte of Staticke or weight, showing how you may knowe the wayght

of any shippo with all her ladyng." This work was "Imprinted at London for Thomas Woodcocke, dwelling in Paules churchyarde, at the sygne of the Black Beare." (1578, 8vo.) It is dedicated to Sir William Winter. In 1587 Bourne published "The arte of shooting in great ordnance" (4to.)

EDWARD HELLOWES.—Translated the work of GUEVARA, which was published in 1578. See GUEVARA.

Dr. JOHN DEE was born in London in 1527, and was of St. John's College, Cambridge. He also studied at Louvain, and lectured at Rheims, returning to England in 1551. He was persecuted, during Mary's reign, as one given to enchantments and sorcery, but was favoured by Queen Elizabeth, and he settled at Mortlake. Dr. Dee was the official adviser of the Muscovy Company. He wrote a learned treatise on the reformation of the calendar. Then followed his "General and rare Memorials pertayning to the perfect art of Navigation, annexed to the paradoxal compas, in playne: now first published twenty-four years after the first invention thereof. Printed at London by John Daye, Anno 1577." (Folio, 80 pages.) There is a curious woodcut of Queen Elizabeth, enthroned in a ship named *Ευρωπη*. This book was intended as a prelude to a larger work, never published, but the manuscripts are in Trinity College, Cambridge, and the British Museum. In the Pepys Library at Cambridge (*Sea Tracts*, iv) there is a list of Dr. Dee's mathematical works relating to navigation. He died at Mortlake in 1608, aged 81. (See notes in Introduction and at page 234.)

ROBERT NORMAN was a compass maker at Ratcliffe. He printed the works of Borough. "Discourse of the magnet and loadstone", by WILLIAM BOROUGH. "Discourse of the variation of the compas or magneticall needlle" (London, 1581, 4to, second edition, 1596); in his own work, entitled, "The newe Attractive, containing a Short Discourse of the Magnet or Loadstone, and among other his Vertues of

a new discovered secret and subtil propertie, concerning the declining of the needle touche, and therewith, under the plain of the horizon. Now first found out by Robert Norman, Hydrographer. Hereunto are annexed certaine necessario rules for the Arte of Navigation by the same R. N. Imprinted at London by J. East, for Richard Ballard, 1585." 4to. Other editions 1596, 1604. In 1590 appeared "The Safeguard of Saylers, or Great Rutter, containing courses, distances, depths, soundings, flouds, and ebbes, with the markes for entering certaine harboroughs, translated out of Dutch into English by Robert Norman, Hydrographer." Edition "newly corrected and augmented by E. Wright," 1612. 4to. Norman invented the dipping needle in 1576, and described the occasion of his discovery in the "Now Attractive."

JOHN FRAMPTON translated MEDINA in 1581. (See MEDINA.)

RICHARD POLTER.—"The Pathway to Perfect Sailing", 1586. He held that different loadstones communicated different degrees of variation to the magnetic needle. [Not published until 1644. An absurd little book.]

JOHN BLAGRAVE.—Second son of John Blagrove, of Bulmarsh Court, near Sunning. He was educated at Reading Grammar School, and St. John's College, Oxford. "The Mathematicall Jewell, showing the making and most excellent use of a singular Instrument so called by John Blagrove of Reading, gentleman. Imprinted at London by Thomas Dawson for Walter Kenge, dwelling in Fleete lane over against the Maidenhead." (1585, folio.) The same author published "*Baculum familiare Catholica sive generale. A Booke of the making and use of a Staffe newly invented by the author, called the Familiar Staffe.* London: Printed by Hugh Jackson, dwelling in Fleete Street, a little beyond the Conduit at the signe of the St. John the Evangelist." (1590. 4to.) "*Astrolobium Vranicum Generale.*—A Necessary and Pleasaunt solace and recreation for Navigators

in their long Journeying, containing the use of an Instrument or generall Astrolabe: newly for them devised by the author, to bring them skilfully acquainted with all the planets, starres, and constellacions of the Heavens: and their courses, movings, and apparences, called the Uranicall Astrolabe. In which, agreeable to the Hypothesis of Nicolaus Copernicus, the Starry Firmament is appointed perpetually fixed, and the earth and his Horizons continually moving from West towards the East once about every 24 hours. Fraught also by new devise with all such necessary supplements for Judicial Astrology as Alkabitius and Claudius Dariothus have delivered by their tables. Whereunto for their further delight he hath annexed another invention expressing in one face the whole globe terrestrial with the two great English voyages lately performed round the world. Compiled by John Blagrove, of Reading, gentleman, the same well-wisher to the mathematicks. Anno 1596."

This map can be no other than the map by Hondius reproduced in "Drake's World Encompassed" (Hakluyt Society).

Devoting himself to his works on navigation, and mathematical studies, Mr. Blagrove never married. He lived at Southcote Lodge, near Reading, and died there in 1611.

ROBERT TANNER.—"A Mirror for Mathematiques. A Golden Gem for Geometricians: a sure safety for Saylers; and an ancient antiquary for astronomers and astrologians: containing also an order how to make an astronomical instrument called the Astrolab, with use thereof." The head line is continuous, and runs thus "The Travailers joy and felicitie". 1587.

ANTHONY ASHLEY translated WAGENAAR in 1588. (See WAGENAAR.)

EMERY MOLYNEUX, Constructor of the Globes at the Middle Temple Library. (See Introduction.)

THOMAS HOOD delivered lectures on navigation in the house of Sir Thomas Smith. He was a Doctor of Medi-

cine, and also sold compasses constructed on Mr. Norman's principle, at his house near the Minorics. (See NORMAN.) The copy of his speech made at the house of Mr. (afterwards Sir Thomas) Smith, in Gracious (now Gracechurch) Street, in November 1588, was published in the same year. It is in the British Museum. In 1590 appeared "The use of the Celestial Globe in plano, set forth in two hemispheres, by Thomas Hood." In the same year: "The use of the Jacobs Staffe, also a dialogue touching the use of the Crosse Staffe, (Imprinted at London for Tobie Cook and Robert Dexter, 1590", 4to.) Also "The elements of Geometrie, by La Ramee; translated by Thomas Hood." (London, 1590, 16mo.) In 1592 Mr. Hood published "The use of both the globes celestiall and terrestriall, most plainly delivered in forme of a dialogue: containing most pleasant and profitable conclusions for the mariner. Printed by Thomas Dawson." This book was written expressly for the Molyneux Globes. In the same year appeared "The Marriner's Guide set forth in forme of a dialogue, wherein the use of the plaine sea carde is brieflie and plainly delivered to the commoditie of all sort as have delight in navigation. Written by Thomas Hood." It is usually bound up with Bourne's "Regiment of the Sea" (see BOURNE). Dr. Hood was the editor of the later editions of Bourne's "Regiment for the Sea." In 1596 appeared "The use of the Mathematicall Instruments, the Crosse Staffe differing from that in common use with the Mariners, and the Jacobs Staffe. Imprinted at London by Robert Field for Robert Dexter. 1596." (4to.) In 1598 Mr. Hood published "The making and use of the Geometricall Instrument called a Sector."

Dr. Hood was a graduate of Christ College, Cambridge, and was employed by Sir Robert Dudley. The only specimen of the cartography of Hood that has come down to us is a manuscript chart of the West Indies dated 1592, preserved in Sir Robert Dudley's own copy of his *Arcano de Mare* at Florence. It was reproduced by Kunstmann

in the Atlas to his "Die Entdeckung Amerikas (Munchen, 1859, fol.)

THOMAS BLUNDEVILLE of Newton Flotman in Norfolk.— "A brief description of Universal Mappes and Cardes and of their use, and also the use of Ptolemy his tables. London, 1589." (4to.) In 1594 was published "M. Blundevile his exercises containing sixe treatises verie necessario to be read and learned by all young gentlemen that are desirous to have a knowledge as well in cosmographie, astronomie, and geographie, as also in the arto of navigation. London, 1594." (4to.) This work was very popular, and there were new editions in 1597, 1613, 1622, and 1636. In 1602 followed "The Theoriques of the seven planets, the making and description and use of two instruments for seamen to find out the latitude of any place without the helpe of sunne, moon, or starre. First invented by Dr. Gilbert, and now set down by Master Blundevile. London, 1602." (4to.)

SIMON FORMAN.—"The Grounds of Longitude, written by Simon Forman, student in astronomy, with an admonition to all those that are incredulous and believe not in the truth of the same" (1591).

ROBERT HUES was born in Hereford in 1552, and studied at Oxford. He was the friend of Sir Walter Raleigh and his executor, and received a pension from the Earl of Northumberland. He devoted himself to the study of navigation and made more than one voyage. He wrote a treatise for the Molyneux Globes entitled "Tractatus de Globis et eorum usu, Londini editi sunt anno 1593, sumptibus Gulielmi Sanderson civis Londinensis conscriptus a Roberti Hues, Londini. Id ædibus Thomæ Dawson, 1594". 8vo. At the end of the "Tractatus" there is a valuable chapter on the rhumbs by Thomas Harriott, who had charge of Raleigh's first expedition to Virginia. There is also a valuable "Index Geographicus" to the Globes, which serves equally well for the maps illustrating the present volume. Hues proposed the famous nautical problem,

“The difference of longitude and the distance being given, how to find the rhumb and the difference of latitude?” The problem was afterwards proposed by Halley (*Phil. Trans.*, vol. xix, No. 219). Hues died at Oxford in 1632, aged 79. The “*Tractatus*” of Hues was translated into Dutch by Pontanus, and afterwards into English.

THOMAS HARRIOTT was born at Oxford in 1560. • He went with Sir Richard Grenville to Virginia, and, in 1588, was published his “*Report on Virginia*”. Also in Hakluyt, “*Brief and true Report of the new found land of Virginia*”. He was Mathematical Tutor to Sir Walter Raleigh, a most learned mathematician, and a voluminous writer. He was patronised by the Earl of Northumberland, and, with Hues, attended him during his long captivity in the Tower. Harriott corresponded with Kepler, and made improvements in algebra. His great work on algebra was published in 1601. His mathematical papers in manuscript are scattered. Some are in the British Museum (*Pluto* cxxiv), some at Sion House (*Hist. MSS. Comm. Report*), and many at Petworth, where they were examined by Dr. Zach in 1784. (*Appendix 6th Report Hist. MSS. Comm.*) He had a dreadful ulcer on his lip caused by a habit of putting instruments with verdigris on them into his mouth; of which he died on July 2nd, 1621.

JOHN DAVIS.—“*The Seaman’s Secrets*.” The first edition is entered in the Register of the Stationers’ Company as printed by Thomas Dawson, on September 3rd, 1594 (*Arber*, ii, p. 312), but no example is known to exist. The second edition, of 1607, in the British Museum, is reproduced in the present volume. The fourth edition, of 1626, is also in the British Museum. The eighth edition, of 1657, is in the Pepys Library at Cambridge (*Sea Tracts*, iv, No. 18). The only copies known of “*The Worlde’s Hydrographical Description*,” by John Davis, are in the Grenville Library at the British Museum (7278), and at the Lenox

Library at New York. It is reprinted in the second (1812) edition of Hakluyt.

WILLIAM BARLOW, a clergyman.—“The Navigator’s Supply, containing many things of principal importance belonging to Navigation” (London, 1597, 4to.) Mr. Barlow describes the azimuth compass with two upright sights, and discourses well and largely on the sea compass.

EDWARD WRIGHT, of Garveston in Norfolk, was born in 1560; and was educated at Gonville and Caius College, Cambridge. He was a great mathematician and astronomer, and expert in making scientific instruments. He was lecturer on navigation for the East India Company, and delivered his lectures in the house of Sir T. Smith. He made the voyage with the Earl of Cumberland in 1589, of which he wrote an account. It is reprinted in the present volume. Wright was mathematical tutor to Prince Henry, and was appointed in 1616 to perfect the charts of the East India Company, with a salary of £50 a year; but he died in the same year.

Wright discovered the principle of the projection for sea charts, generally known as Mercator’s Projection. In 1599 he published his “Certain errors in Navigation detected and corrected”; in which he fully explains the principle of the projection; and gives a table of meridional parts. The second edition, dedicated to Prince Henry, appeared in 1610. The third, in 1657, was edited by Moxon. Wright also worked with Briggs at the introduction of the use of logarithms, and translated Napier’s “*Logarithmorum Descriptio*”, which was published by his son Samuel Wright, and dedicated to the East India Company. He also translated the “Haven Finding Art” (*Portuum Investigandorum Ratio*) of STEVINUS in 1599, which was bound up with the third edition of the “Certain Errors”. Wright was almost certainly the author of the “New Map”, which is reproduced in the present volume. See Mr. Coote’s Note.

WILLIAM GILBERT, a native of Colchester, was born in

1540. He was a Cambridge Graduate, and was a Doctor of Medicine. Dr. Gilbert discovered some properties of the loadstone, and wrote, "*De Magnete Magneticisque corporibus et de magno magneto tellure, Physiologia nova*" (London, 1600, fol.) It contained many suggestions for improvements in navigation. Dr. Gilbert died in 1603.

ANTHONY LYNTON.—"*Newes of the complement of the Art of Navigation, and of the mightie empire of Cataia; together with the Straits of Anian*" (London, Felix Kynaston, 1602, 4to.)

HENRY BRIGGS was born in Yorkshire in 1556, and died at Oxford in 1630, where he was Professor of Geometry. He promoted the use of logarithms, and for this purpose made a journey to Edinburgh to discuss the matter with Napier. In 1624 Briggs published his "*Arithmetica Logarithmica*". In the second edition of Wright's "*Certain Errors*" are Briggs's "*Tables for the Improvement of Navigation*" 1610. He also published the six first books of Euclid in 1620, and a treatise on the North-West Passage in 1622. He was a great encourager and promoter of Arctic discovery.

SIR ROBERT DUDLEY.—"*Dell Arcano de Mare di D. D. Ruberto Dudleo, Duca di Northumbria e Conte di Warwick. Libri Sei*." (Firenze, 3 vols., folio, 1646; second edition, 1661.) This superb work contains a complete atlas of maps, treatises on navigation, and fine plates of all the instruments in use on board ship. (See Introduction.)

HENRY HEXHAM.—"*Atlas or a Geographick description of the regions, countries, and kingdomes of the world, through Europe, Asia, Africa, and America, represented by new and exact maps: translated by Henry Hexham, Quarter Master to the regiment of Colonel Goring*" (2 vols., folio). Amsterdam by Henry Hondius and John Johnson. Dedicated to Charles I, 1636. In the preface, Hexham says that he undertook the translation at the request of Henry Hondius, in order to make known the laborious work of

Gorard Mercator and Jodocus Hondius. He says it is a translation of the Atlas Major, enlarged and augmented out of many worthy authors. This is a superb work. Hexham was a gallant soldier and accomplished writer. He began his military career as page to Sir Francis Vere at the siege of Ostend.

RUDSTON, Master.—A mathematician mentioned by Baffin as having worked out his observations taken during his voyage to Hudson's Bay in 1615. Among the Harriott MSS. there is a letter from Master Rudston, dated 1615, relating to the variation of the compass.

SEARLE?—Mentioned by Baffin as the author of an Ephemeris which he used in 1615 in his voyage to Hudson's Bay.

EDMUND GUNTER was born in 1581, and was educated at Westminster under Busby, and at Christ Church, Oxford. In 1619 he became Professor of Astronomy at Gresham College, and he died while holding that appointment in 1626. In 1620 he published his "Canon Triangulorum", tables of artificial sines and tangents, with Briggs's logarithms of common numbers. In 1622 he discovered the variation or changeable declination of the magnetic needle. He also applied the logarithms of numbers, and of sines and tangents to straight lines drawn on a scale or ruler. This was called Gunter's Scale. He introduced the measuring chain, and was the first who used the term cosino for the sine of the complement of an arc.

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APPENDIX B.

The Letters patents of the Queenes Majestie,
graunted to Master Adrian Gylbert and others, for the search
and discoverie of the North-west Passage to China.

ELIZABETH, by the grace of God of England, Fraunce, and Ireland, Queene, defender of the faythe, etc. To all to whome these presents shall come, greeting: Forasmuch as our trustie and well-beloved subject, Adrian Gylbert, of Sandridge, in the Countie of Devon, Gentleman, to his great costes and charges, hath greatly and earnestly travailed and sought, and yet doth travel and seeke, and by divers meanes indevoureth and laboureth, that the Passage unto China and the Iles of Molluccas, by the Northwestward, Northeastwarde, or Northwarde, unto which part or partes of the worlde, none of our Loyall subjectes have hitherto had any traffike or trade, may be discovered, knownen, and frequented by the subjects of this our Realme: know ye therefore that for the considerations aforesayd, and for divers other good considerations¹ us thereunto specially moving, We of our grace especiall, certaine knowledge and meere motion, have given and graunted, and by these presents for us, our heires and successors, doe give and graunt free libertie, power, and full authoritie to the sayd Adrian Gylbert, and to any other person by him or his heires to be assigned, and to those his Associates and assistants, whose names are written in a sedule hereunto

¹ Probably the "divers other good considerations" refer to the share in the profits which Her Majesty intended to claim.

annexed, and to their heires, and to one assignee of eche of them, and ech of their heires at all times, and at any time or times after the date of these presents, under our Banners and Ensignes freely, without let, interruption, or restraint of us, our heires or successors, any lawe, statute, proclamation, patent, charter, or proviso to the contrary notwithstanding, to sayle, make voyage, and by any maner of meanes to passe and to depart out of this our Realme of Englande, or any our Realmes, Dominions, or Territories into all or any Iles, Countries, Regions, Provinces, Territories, Seas, Rivers, Portes, Bayes, Creekes, armes of the Sea, and all Havens, and all maner of other places whatsoever, that by the sayd Northwestward, Northeastward, or Northward, is to be by him, his associates or assignees discovered, and for and in the sayde sayling, voyage, and passage, to have and use so many ships, Barks, Pinnesses, or other vessels of any quantitie or burthen, with all the furniture of men, victuals, and all maner of necessary provision, armour, weapons, ordinance, targets, and appurtenances whatsoever, as to such a voyage shall or may be requisite, convenient or commodious, any lawe, statute, ordinance or proviso to the contrarie thereof notwithstanding. And also we doe give and graunt to the sayde Adrian Gylbert, and his said associates, and to such assignee of him and his heires and to the heires and one assignee of every of his sayde associates for ever, full power and absolute authoritie to trade and make their resiance in any of the sayd Iles, Countries, Regions, Provinces, Territories, Seas, Rivers, Portes, Bayes, and Havens, and all maner of other places whatsoever, with all commodities, profites, and emoluments in the sayd place or any of them, growing and arising, with all maner of privileges, prerogatives, jurisdictions, and royalties both by sea and land whatsoever, yeelding and paying therefore unto us, our heires and successors, the tenth part of all such

golde and silver oare, pearles, jewels, and precious stones, or the value thereof, as the sayd Adrian Gylbert and his sayd associates, their heires and assignees, servants, factors, or workemen, and every or any of. them shall finde, the sayd tenth to be delivered duely to our customer, or other officers by us, our heires or successors thereunto assigned, in the Portes of London, Dartmouth, or Plymmouth, at which three places onely the sayd Adrian Gylbert, and his sayd associates, their sayd heires and assignes, shall lade, charge, arrive, and discharge all maner of wares, goods, and marchandizes whatsoever to the sayd voyage, and newe trade belonging or appertaining. And moreover, we have given, graunted, and authorized, and by these presents for us, our heires and successors, of our grace especiall, certaine knowledge, and meere motion, doe give, graunt, and authorize the sayd Adrian Gylbert, and his sayd associates for ever, their heires, and their sayde assignes and every of them, that if the aforesayd Iles, Countries, Regions, Provinces, Territories, Seas, Rivers, Portes, Bayes, or Havens, or any other of the premisses by the sayd Adrian Gylbert or his associates, their heires and their sayd assignes, or any of them to be found by them discovered and traffiked unto by any trade as aforesayde, shall be by any other our subjects visited, frequented, haunted, traded unto or inhabited by the wayes aforesayd, without the speciall licence in writing of the sayd Adrian Gylbert and his associates, and their heires and assignes for ever, or by the most part of them, so that the sayd Adrian Gylbert, his heires or assignes be one of them, that then as well their shippe, or shippes, in any such voyage or voyages used, as all and singular their goods, wares, and marchandizes, or any oth^r things whatsoever, from or to any of the places aforesayd transported, that so shal presume to visit, frequent, haunt, trade unto, or inhabite, shal be forfeited and confiscated *ipso facto*, the one halfe of the

same goods and marchandizes, or other things whatsoever, or the value thereof to be to the use of us, our heires or successours, and the other moytie thereof, to be to the use of the said Adrian Gylbert, and his said associates, their heires and assignes wee impose, give, assigne, create and confirme this name peculiar to be named by, to sue and to be sued by, that is to wit, by the name of the colleagues of the fellowship for the discoverie of the Northwest passage and them for us, our heires and successours by that name doe incorporate, and do erect and create as one body corporate to have continuance for ever. Moreover unto the sayd Adrian Gylbert, and his sayd associates, and unto their heires and their sayd assignes for ever, by name of the colleagues of the fellowship, for the discoverie of the Northwest passage, we have given, graunted, and confirmed, and doe by these presents give, graunt, and confirme full power and authoritie from time to time, and at all times hereafter, to make, order, decree, and enact, constitute and ordeine and appoint all such ordinances, orders, decrees, lawes, and acts, as the sayd newe corporation or body politique, colleagues of the fellowship for the discoverie of the Northwest passage, shall thinke meete, necessary, and convenient so that they or any of them be not contrary to the lawes of this realme, and of this our present graunt.

And wee by our Royall prerogative, and fulnesse of our authoritie of our grace especiall, certaine knowledge and meere motion, doe establish, confirme and ratifie all such ordinances, orders, decrees, lawes and acts to be in so full and great power and authoritie, as we, our heires or successours may or can in any such case graunt, confirme, or ratifie. And further, for the better encouragement of our loving subjects in this discoverie, wee by our Royall prerogative, and fulnesse of our authoritie, for us, our heires and successours, doe give, graunt, establish, confirme, ordeine, ratifie and allowe by these presents, to the sayd

Adrian Gylbert and to his associates, and to the heires and assignes of them and every of them for ever, and to all other person or persons of our loving subjects whatsoever that shall hereafter travell, sayle, discover, or make voyage as aforesayd to any the Iles, Mainlands, Countries, or Territories whatsoever, by virtue of this our graunt to be discovered; that the heires and assignes of them and every of them being come within any of the Iles, Mainlands and Countries, or Territories whatsoever before mentioned, shall have and enjoy all the privileges of free Denizens, as persons native borne within this our Realme of England, or within our allegiance for ever, in such like ample maner and forme, as if they were or had been borne and personally resiant within our sayde Realme, any lawe, statute, proclamation, custome, or usage to the contrarie hereof in any wise notwithstanding. Moreover, for the consideration aforesayde by virtue hereof, wee give and graunt unto the sayde Adrian Gylbert, his heires and assignes for ever, free libertie, licence and privilege, that during the space of five yeeres next and immediately ensuing the date hereof, it shal not be lawfull for any person or persons whatsoever, to visite, haunt, frequent, trade, or make voyage to any Iles, Mainlands, Countries, Regions, Provinces, Territories, Seas, Rivers, Portes, Bayes, and Havens, nor to any other Havens or places whatsoever hitherto not yet discovered, by any of our subjects by vertue of this graunt to be traded unto, without the speciall consent and good liking of the sayd Adrian Gylbert, his heires and assignes first had in writing. And if any person or persons of the associates of the sayde Adrian, his heires or assignes, or any other person or persons whatsoever, free of this discoverie, shall doe any act or acts contrary to the tenour and true meaning hereof, during the space of the sayde five yeeres, that then the partie and parties so offending, they and their heires for ever, shall loose (*ipso facto*) the benefite and

privilege of this our graunt, and shall stand and remaine to all intents and purposes as persons exempted out of this graunt: And further, by vertue hereof, we give and graunt for us, our heires and successours, at all times during the space of five yeeres next ensuing the date hereof, free libertie and licence, and full authoritie to the sayd Adrian Gylbert, and his hoires and assignes, that if it shall happen any one or moe in any shippe or shippes sayling on their sayde voyage, to become mutinous, seditious, disorderly, or any way unruly, to the prejudice or hinderance of the hope for successe in the attempt or prosecution of this discoverie or trade intended, to use or exccute upon him or them so offending, such punishment, correction, or execution as the cause shall be found in justice to require by the verdict of twelve of the companie sworne therounto, as in such case appertaineth. That expresse mention of the certaintie of the premises, or of other giftes or graunts by us to the sayde Adrian Gylbert and his associates before this time made is not mentioned in these presents, or any other lawe, act, statute, proviso, graunt, or proclamation, heretofore made or hereafter to be made, to the contrary hercof, in any wise notwithstanding.

In witnesse whereof we have caused these our Letters to be made patents.

Witnesse our selfe at Westminster, the sixt day of Februarie, in the sixe and twentie yeere of our Reigne.

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